EFFECTS OF SEMANTIC MAPPING AND SEMANTIC FEATURE ANALYSIS ON THE OUTCOMES OF SEVENTH GRADE SPANISH-SPEAKING LIMITED ENGLISH PROFICIENT STUDENTS

By

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The *words* of the wise
are like goads,
their collected sayings
like firmly embedded nails--
given by one Shepherd.

Ecclesiastes 12:11

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By

Lorraine Clayton Kandor

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Chair: Dr. Clemens Hallman
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The purpose of this study was to investigate the effects of semantic mapping (SM) and semantic feature analysis (SFA) on vocabulary and reading comprehension subtests of seventh grade Spanish-speaking limited English proficient (LEP) students. The second purpose was to investigate the effects of SM and SFA on teachers' ability to judge students' knowledge of targeted words.

Fourteen teachers volunteered to participate during summer school, July through August 1993. Seven teachers and one teacher's aide attended SM workshops and 6 teachers attended SFA workshops. The SM group included 30 students, and the SFA group included 26 students. Teachers used their assigned instructional strategy (SM or SFA) twice a week for 30 minutes in class with 8 targeted words per week. To investigate the effects on vocabulary and reading comprehension, teachers administered vocabulary and reading comprehension subtests of the Stanford Achievement Test (SAT) the first and last weeks of the study. To investigate teachers' ability to judge students' knowledge of 40 targeted words, teachers were administered a prediction survey the first and last weeks of the study. A series of analyses of covariance using a nested design were conducted to test the hypotheses that there were no significant differences between the two experimental groups on students' SAT vocabulary and reading comprehension subtest scores. A t-test was conducted to determine teachers' ability to predict students' knowledge of targeted words after using the instructional strategies.

Results showed that, although students in both treatment groups improved their mean scores on the vocabulary subtest of the SAT, their improvement was not significant. Student vocabulary posttest means in the SFA group were slightly higher than students in the SM group. This was mainly due to their performance on the synonyms subscore section of the vocabulary subtest. Reading comprehension scores did not improve significantly in either group. Although teachers used SM and SFA to tap students' prior knowledge of targeted words, teachers were not better able to predict students' performance on the vocabulary subtest after the treatment. Results showed that both SM and

SFA were viable strategies for students to learn vocabulary synonyms.

CHAPTER 1

INTRODUCTION

Background of the Study

Demographic trends of American classrooms indicate that numbers of Spanish-speaking limited English proficient (LEP) students are increasing. The Latino citizenry in the United States "is growing at five times the rate of the rest of the population" (ASPIRA Association, 1990, p. 7). Many Spanish-speaking LEP students face a prodigious challenge in learning about the school culture, the rules of the classroom, and the peer pressure, but most importantly, the content within the subject matter areas. LEP students face an academic challenge greater than that of their English-speaking peers. Not only are they required to learn the same content as them, but they must do so in another language while improving their second language skills. "In 1989, only 51% of the Hispanic adults aged 25 or older in this country had completed high school, compared to 79% of their non-Hispanic peers" (ASPIRA Association, 1990, p. 8). Clearly, the Spanish-speaking population of kindergarten through twelfth grade LEP students is in need of teachers who are more effective in meeting their educational needs.

Between 1986 and 1992, approximately 1.3 million teachers were employed by school districts in the United States. About 95% of those teachers were Anglo, while about 30% of their students were minorities. Martinez (1992) points out that in the years 1985-2000, the Hispanic population will grow by 45.9 percent" and that, "by the year 2000, fewer than 5 percent of the teaching force will be minority" (p. 164). By the year 2020, 45.5% of the nation's student population will be minority (Ploumis-Devick & Follman, 1993). Martinez (1992) urges that training and sensitizing mainstream teachers through both preservice and inservice is necessary. Teachers must be able to "provide effective instructional services to language minority students" (p. 164) with diverse learning styles. In addition, teachers today face difficulties in contending with school violence, discipline problems, but most importantly, in trying to cover the curricular materials. Giles (1989) states that

> subject area teachers in departmentalized middle schools contend that there is little time to teach students to read/write and cover the curricular materials germaine [sic] to their subjects. They, too, are frustrated by their students' inadequate reading and insufficient writing abilities. (p. 8)

Bradby (1991) points out that Hispanic Language Minority (LM) and Hispanic non-LM eighth graders failed to achieve basic levels of performance on both reading and math achievement tests. Among those students, "those with low proficiency in English failed to achieve at a much higher rate than students with high proficiency" (p. vii).

Thus, teachers are in need of strategies that may help their students overcome at least some of their many education-related challenges. Not all LEP students have the ability to apply learning strategies to understand their academic subject areas by themselves. Oftentimes their parents may not have the ability, the time, or the English language skills to help them either. Therefore, the teachers are largely responsible for providing comprehensible instruction to LEP students.

Comprehensible Instruction

Why is comprehensible instruction so important in educating LEP students? Krashen (1985) states that mere exposure to language "does not necessarily entail comprehensible input" (p. 7). His ***Input Hypothesis*** suggests that, for effective language acquisition to take place, the ***input (i)*** must be at the acquirer's current *i + 1* level. The ***input***, in the case of the classroom, refers to the language and learning environment provided largely by the teacher, the students and the materials. The *+ 1* refers to the level of the input. In order for input to be comprehensible and for language acquisition to take place, quality input must fall within a range of proficiency just slightly above the current level of the acquirer. "We move from *i*, our current level, to *i + 1*, the next level along the natural order, by understanding input containing *i + 1*" (Krashen, 1985, p. 2). Teachers hold a great deal of responsibility as to whether or not students are receiving comprehensible input, but they must first understand the concept and the need. In addition, they must be provided with strategies which facilitate comprehensible instruction.

In general, there has been a deficiency of comprehensible instruction for large numbers of LEP students. (Center for Law and Education, 1990). Lau v. Nichols (1974) was a class action suit in the interest of approximately 1,800 students of Chinese ancestry who did not speak English. The plaintiff argued that the San Francisco school system's failure to provide adequate instructional services (i.e., English to speakers of other languages (ESOL) or instruction in their native language) violated §601 of the Civil Rights Act of 1964. This Act bans discrimination based "on the ground of race, color or national origin" (Lau v. Nichols, 1974, p. 787). The United States Supreme Court held that equality was not rendered merely by supplying the same facilities, text books, teachers, and curriculum (Lau v. Nichols, 1974). The court interpreted §601 to mandate schools to provide for the needs of LEP students. Since this legislation in California, much has been done to improve educational programs for LEP students in the United States. In addition to the Civil Rights Act of 1964, other landmark legislation at the federal level has helped to improve educational programs for LEP students. Such legislation includes the Elementary and Secondary Act of 1965, the Bilingual Education Acts of 1968, 1974, 1978 and 1984, the May 25th Memorandum (1970), the Equal Educational Opportunities Act of 1974, the Department of Education Organization Act (1979), and the Education Consolidation and Improvement Act of 1981 (Fradd, Vega & Hallman, 1985).

The 1990 ESOL[1] Agreement

In 1990, the following plaintiffs, League of United Latin American Citizens (LULAC), ASPIRA of Florida, the Farmworkers Association of Central Florida, the Florida State Conference of NAACP[2] Branches, the Haitian Refugee Center, the Spanish American league Against Discrimination (SALAD), the American Hispanic Educators' Association of Dade (AHEAD), the Haitian Educators' Association, and a few other individuals reached a ***Settlement Agreement*** with defendants, Florida Board of Education, Florida Department of Education, the governor, the chairman of the State Board of Education, the secretary of state, the attorney general, the treasurer and insurance commissioner, the controller, the commissioner of agriculture, the commissioner of education, and the executive officer and secretary of the State Board of Education. The Agreement resolved

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[1] English to speakers of other languages

[2] National Association for the Advancement of Colored People

> a dispute as to the issue of compliance by the defendants with their legal obligations under federal and state law and regulations including the federal Equal Educational Opportunity Act [20 U. S. C. 170 3(f)], Title VI of the federal Civil Rights Act of 1964, the Florida Educational Equity Act, and related federal state provisions regarding compensatory, migrant, and special education. (Center for Law and Education, 1990, p. 2)

It was agreed that the state (i.e., the defendants) were accountable for setting and enforcing standards for school districts consistent with the terms of the Agreement. This 1990 ESOL Agreement (a.k.a., Consent Decree) involves six major components:

1. the identification and assessment of LEP students
2. equal access to appropriate programming
3. equal access to appropriate categorical and other programs for LEP students
4. personnel certification and inservice
5. monitoring issues
6. outcome measures (an evaluation system addressing equal access and program effectiveness by district)

Since this Agreement, much has been done to improve educational services for limited English proficient (LEP) students in Florida. This study involves an issue within personnel training (Section IV). According to the Agreement, teachers assigned to teach LEP students must use ***ESOL strategies*** successfully. ESOL strategies are techniques used by teachers of LEP students to help make instruction more comprehensible. Strategies are taught through selected content from the five areas as shown below. ESOL teachers or English teachers who are responsible for a) providing instruction in language arts courses and b) the primary language arts grades to LEP students are to receive 15 semester hours or 300 inservice points in the following five areas:

1. Methods of teaching ESOL
2. ESOL curriculum and materials development
3. Cross-cultural communication and understanding
4. Applied linguistics
5. Testing and evaluation of ESOL

Basic subject area teachers (math, science, social studies, computer literacy) assigned to instruct LEP students are to complete at 3 semester hours or 60 points of inservice training in numbers 1, 2, 3, or 5 as shown above, or a combination of content from these areas. Teachers of other subject areas are required to have 18 hours of inservice points in numbers 1, 2, 3, or 5 as shown above, or a comgination of content from these areas. After teachers have received the appropriate training, school districts must maintain records as to how all of the above listed teachers are evaluated as successful in using ESOL strategies. Florida Department of Education monitors these records and observes teachers using ESOL strategies as well (Center for Law and Education, 1990).

This study focused on two ESOL strategies, semantic mapping (SM) and semantic feature analysis (SFA). These strategies have applications for all teachers of LEP students, in all subject areas. Although this study focused on using the strategies for vocabulary development, they may be used in a variety of other ways, as is discussed in Chapter Two.

In summary, the increasing numbers of Spanish-speaking language minority students in our nation's schools, their low performance on standardized assessment instruments, and their disproportionately high dropout rates, indicate that much needs to be done to address the language needs of this population.

Definitions

Background Knowledge (a.k.a., prior knowledge) is the general world knowledge that each student brings to the classroom based on his or her cumulative educational and personal life experiences.

English to speakers of other languages (ESOL) refers to English language educational services for limited English proficient students.

ESOL Strategies are language learning techniques applied by teachers to help make instruction more comprehensible to limited English proficient students.

Limited English Proficient (LEP) Students, in Florida, are identified as those who have answered *yes* to one or more of the three questions on the home language survey mandated by State Board of Education Rule 6A-6.0902(1):

(a) Is a language other than English used in the home?

(b) Did the student have a first language other than English?

(c) Does the student most frequently speak a language other than English?

The home language survey is given to every student in Florida as part of school registration procedures.[3] Any student answering *yes* to one or more of the home language survey questions is required to be assessed using a state approved, norm-referenced, standardized assessment instrument. Any kindergarten through twelfth grade student who tests below the publisher's cut off score on an aural/oral assessment instrument, and in grades 4-12, who scores below the 32nd percentile on a reading/writing assessment instrument is designated as ***LEP***. Mainstreamed Students, for purposes of this study, refers to students in the regular classroom. They may be LEP students (currently or formerly identified as LEP) participating in classes with regular students and regular content-area teachers.

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[3] Similar surveys are conducted in other states such as California, New York and Texas.

Regular Students refers to the wide range of students, not identified as LEP, who participate in the mainstream classroom taught by regular teachers.

Regular Teachers, for purposes of this study, are content area teachers who have not completed more than 60 points of inservice training or 3 semester hours in one of the four areas required by the ESOL Agreement.

Semantic Mapping (SM), often used interchangeably with ***semantic webbing***, is a classification strategy which results in a network of interlinking ideas resembling a web. A semantic map is a graphic organizer which visually displays related ideas of a concept, each idea written inside a geometrical shape such as a circle, square or rectangle. These shapes are connected by lines which show hierarchal associations among the concepts.

Semantic Feature Analysis (SFA) compares differences and similarities in attributes among related words or synonyms. Related words are written in the first column of a matrix, and features of those words are written in the top row of the matrix. The grid formed by the rows and columns provides a linking cell for each word to be considered for each feature. For each feature that applies to each term, an appropriate symbol, such as a plus (+) sign, is marked in that cell. Likewise, for each feature that does not apply to each term, an appropriate symbol, such as a minus (-) sign, is marked in that cell. The resulting grid reveals how related words, with a multitude of elusive attributes, differ from, and resemble each other.

Problem Statement

Teachers in American schools see increasing numbers of LEP students in their classrooms each year, many of whom do not know much of the content area vocabulary in English. One of the most important aspects in learning a second language is learning lots of words in that language (Fuller, 1987). Although there are many vocabulary learning techniques which teachers may utilize, there is a need to identify which vocabulary learning techniques are the most effective with specific LEP populations. This study investigates the effectiveness of two techniques in particular, SM and SFA, with a Spanish-speaking population of seventh-grade LEP students.

"Vocabulary learning has long been deemphasized [sic] in language teaching, much to the detriment of the students" (Rogerson, 1990, p. vii), who have an urgent need for increasing their English lexicons. Naturally, this vocabulary deficit renders them less successful in school than their English-speaking peers. Because of their limited English proficiency, LEP students very well may be several grade levels behind the vocabulary level of their peers

(Nagy & Herman, 1987; Nation, 1990; Smith, 1941). Second language learners need assistance in overcoming this difference in vocabulary size (Nation, 1990). Saville-Troike (1984) states that "vocabulary knowledge in English is the most important aspect of oral English proficiency for academic achievement," and that "we must begin to place more emphasis on vocabulary learning and less on grammar and pronunciation" (p. 216). Teachers are in need of instructional techniques which may improve LEP students' vocabulary and reading comprehension. Both teachers and their LEP students may benefit by using strategies which help to make content area English words more comprehensible to the students. This study investigates the effectiveness of two vocabulary learning strategies, SM and SFA.

Research in the area of SM and SFA suggests that both strategies may be effective with regular, learning disabled (LD) and minority students (Heimlich & Pittelman, 1986; Peterson, 1991; Scanlon, Duran, Reyes & Gallego, 1992; Sinatra, Stahl-Gemake & Berg, 1984). Both strategies provide opportunities for teachers to (a) identify target words, (b) activate and/or tap students' prior knowledge, (c) classify the new concept by integrating prior knowledge, and (d) provide multiple exposures to each word in a variety of contexts. These four steps have been shown to be essential qualities of effective vocabulary instruction (Graves, 1987; Nagy, 1988; Stahl, 1986). Because vocabulary correlates highly with reading comprehension (Blachowicz, 1986; Durkin, 1989; Thelen, 1986) and intelligence (Drum & Konopak, 1987; Just & Carpenter, 1987; Nagy & Herman, 1987; Smith, 1941), vocabulary learning strategies may help to improve LEP students' overall comprehension. SM and SFA may also provide teachers with strategies to tap their students' prior knowledge, a necessary step to facilitate comprehension. Strategies leading to more comprehensible instruction may contribute to the difference between academic failure and academic success for many LEP students.

Although SM, SFA, and many other vocabulary learning strategies suggest that teachers select the words to teach, of the literature reviewed for this study, none showed evidence that teachers are good predictors of what background knowledge students have or do not have with given words or concepts (see Dale & O'Rourke, 1986; Heimlich & Pittelman, 1990; Klein, 1988; Stahl, 1986). Most assume that teachers know which words students need most to learn. Some do, however, provide minimal guidance as to ***which*** words should be taught (Dale & O'Rourke, 1971; Johnson & Pearson, 1984; Nation, 1990; Pittelman, Heimlich, Berglund & French, 1991; Stahl, 1986). Because teachers often select the words that students will study, it is important to know if teachers are, in fact, able to judge what words their students already know or do not know, and which words, among so many, deserve direct instruction. Before targeting words to be learned by LEP students, teachers should first tap the prior knowledge of their students to discover which words they know, partially know, and do not know (Dale & O'Rourke, 1971). Otherwise, precious class time may be lost.

Need for the Study

The training components mandated by the 1990 ESOL Agreement, has resulted in a great deal of time, effort and money being spent to train teachers of over 111,000[4] LEP students in the state of Florida (Florida Department of Education, 1993). A core component of this training focuses on ESOL strategies. Although LEP students are tested before being placed into an ESOL program, these tests do not indicate students' strengths and weaknesses in study skills and learning strategies. Nor does the Agreement, or State Board Rules, indicate which strategies are most effective for teachers to implement with LEP students.

It is assumed that an ample English lexicon is important to LEP students in all of the four major language skills: reading, writing, listening and speaking in order to function in an academic environment. LEP students, who may be several years behind their English-speaking peers in their vocabulary and reading comprehension level (Nagy & Herman, 1987), face a monumental task of increasing their vocabulary, perhaps by thousands of words, to meet the level of their English-speaking peers.

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[4] This figure reflects student membership taken on one school day in October, 1992. For this reason, it may be an underestimate of the total LEP student population in Florida.

> Surveys and research studies point to the greater difficulty in acquiring a meaning vocabulary by children of low-income families, minorities, and bilinguals, particularly at Grade [sic] 4 and beyond. (Chall, 1987, p. 14)

One of the most traditional methods that teachers use for student vocabulary development is to have students look words up in a dictionary, write out the definitions, and then write sentences using the words (Graves & Prenn, 1986). Stahl & Fairbanks (1986) found that "methods that provided only definitional information about each to-be-learned word," or provided only "one or two exposures of meaningful information about each word" (p. 101) did not improve comprehension. Nor does looking a word up in a dictionary or writing a sentence about an unfamiliar word provide much motivation or meaningful learning for students (Blachowicz, 1986). "This activity tends to be meaningless and often results in rote learning and rapid forgetting" (Thelen, 1986, p. 603). SM and SFA strategies provide motivation for students to learn words (Heimlich & Pittelman, 1986; Johnson & Pearson, 1984; Peterson, 1990; Pittelman, Heimlich, Berglund & French, 1991; Sinatra, Stahl-Gemake & Berg, 1984). Pittleman et al. (1991) reports that a survey of 34 ***regular reading textbooks*** showed that SFA is frequently recommended as a vocabulary learning strategy. A review of about 30 ***textbooks used by ESOL teachers for LEP students'***

vocabulary development revealed that the majority of these textbook writers do not use either SM or SFA as vocabulary learning strategies (Abraham & Mackey, 1989; Ayers, 1986; Bader & Burt, 1986; Boggs & Dixson, 1991; Bromberg & Gordon, 1987; Burgmeier, Eldred & Zimmerman, 1991; Clark & Duncan, 1990; European Language Institute, 1987; Fry, 1989; Fuchs, 1992; Kesselman-Turkel & Peterson, 1982; King & Granowsky, 1986; Liebowitz, 1988; Lloyd, 1990; Lott, 1988; Lougheed, 1993; Moe, Dahl, Hopkins, Miller & Moe, 1988a; Rogerson, 1990; Trump, Trechter & Holisky, 1992; Tyler, 1986; Yorkey, 1981; Zaffran & Krulik, 1991). Only a few use SFA as a vocabulary learning strategy (Bunnell, 1992; Seal, 1990a, 1990b;); fewer still use SM as a vocabulary learning strategy (Moe, Dahl, Hopkins, Miller & Moe, 1988b). Only two of approximately 30 textbooks reviewed (Eckstut & Sorensen, 1992; Sökmen, 1992) encouraged the use of both strategies for vocabulary development. In addition, little attention to SM or SFA in the literature regarding vocabulary development for LEP students exists (Kaufman, 1992; Maldonado-Colon, 1991). This study may be useful for future ESOL teacher training, and textbook and materials development. For students of diverse language backgrounds, there is a great need for a variety of strategies to learn vocabulary. SM and SFA have been shown to be effective not only for vocabulary development, but also for a variety of other purposes as discussed in Chapter Two.

Purpose of the Study

The purpose of this study was to investigate the effects of SM and SFA on vocabulary and reading comprehension subtests of seventh grade Spanish-speaking LEP students. The secondary purpose was to investigate the effects of SM and SFA on teachers' abilities to judge their students' knowledge of targeted words. It was assumed that after using the strategies as tools to tap their students' prior knowledge and to teach the words, teachers might be better able to judge students' knowledge of the targeted words. Teachers were asked to predict what percent of their students' had sufficient knowledge of those words to correctly respond to standardized vocabulary test items with those words in the stem of the multiple choice item.

The research questions to be answered by this investigation are

1. Is there a significant effect of treatment on students' vocabulary achievement?
2. Is there a significant effect of treatment on students' reading comprehension achievement?
3. Is there a significant effect of treatment on the teachers' abilities to judge their students' knowledge of the targeted words?

Although SM and SFA are often recommended as vocabulary learning strategies, more research is needed to determine the effectiveness of these strategies with different populations of LEP students. The purpose of this study was to investigate the effects of SM and SFA on the Stanford Achievement Test (SAT) scores (vocabulary multiple choice items) of seventh grade Spanish-speaking LEP students. Teachers used the strategies in class twice a week for a 6-week period. Teachers were trained in either SM or SFA as vocabulary learning strategies which tap LEP students' background knowledge of targeted words.

This 6-week study was conducted during summer school in Broward County, Florida, from July through August, 1993. Based on teacher willingness to participate, 10 of the 12 district ESOL center schools were involved. The study examined the effects on LEP students in self-contained[5] ESOL programs.

Thirteen teachers and one teacher's aide (TA) volunteered to participate. Seven teachers and the TA attended SM workshops and 6 teachers attended SFA workshops, The SM group included 30 students, and the SFA group included 26. Teachers used their assigned instructional strategy (SM or SFA) twice a week for 30 minutes. For each 30 minute lesson, teachers were given 4 target words. To investigate the effects on vocabulary and reading ability, teachers administered vocabulary and reading comprehension subtests of the SAT the first and last weeks of the study. To investigate teachers' ability to judge students' knowledge of forty targeted words, teachers were administered a prediction survey the first and last weeks of the study.

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[5] Self-contained classes are designed specifically for LEP students who are "contained" in classes together all day, apart from regular students. The philosophy of the self-contained program is that LEP students can best learn English and the content of the basic subject areas through comprehensible instruction provided by ESOL teachers who understand their language needs.

Increasing numbers of regular content area teachers have mainstreamed LEP students in their classrooms. These teachers are responsible for providing equal educational opportunity to all of their students (Lau v. Nichols). Providing guidelines for effective instructional strategies for teachers to use with LEP students may help to make a significant contribution to their academic success. This study emphasized the importance of vocabulary development for LEP students, comparing the effectiveness of two instructional strategies, SM and SFA. The two areas of language instruction studied were vocabulary and reading comprehension. The hypotheses correspond to these areas of interest.

Hypotheses

Based on the literature which shows that SM and SFA are effective vocabulary instructional methods, it was hypothesized that both treatments would influence LEP students' achievement on the SAT vocabulary subtest. Because of the high correlation between vocabulary and reading comprehension, it was hypothesized that reading achievement may also be influenced by the treatment. In addition, it was hypothesized that teachers using the methods would be able to improve their ability to judge their students' knowledge of the targeted words.

In order to carry out this study, a nested design employing an analysis of covariance model was developed for the first two hypotheses, and an analysis of variance model was developed for the third hypothesis. Data for both descriptive statistics and statistically tested hypotheses were compiled. To analyze the data to test for statistical significance, the following null hypotheses were proposed:

1. There is no significant effect of treatment on student posttest vocabulary comprehension, after adjustment for the pretest score.
2. There is no significant effect of treatment on student posttest reading comprehension, after adjustment for the pretest score.
3. There is no significant effect of treatment on teachers' ability to judge students' knowledge of the targeted words.

Assumptions

This study is based on the following assumptions:

1. The students participating in this study were correctly identified as LEP by the district.

2. The students did not receive instruction in SM or SFA outside of the designated thirty minutes twice a week.
3. The self-report information from the teachers is valid and reliable.
4. The self-report information from the students is valid and reliable.
5. The instrument used for teachers to judge students' knowledge of vocabulary is valid and reliable.

Delimitations

The following delimitations apply to this study:

1. The study was limited to 56 LEP students.
2. Participating Spanish-speaking students involved 17 countries of national origin.
3. The study was 6 weeks in length.
4. The teachers selected for the study were interested in participating.

Limitations

The following limitations apply to this study:

1. Subjects were not randomly selected. Their participation was requested after their teacher volunteered to participate.

2. The study was limited to seventh grade Spanish-speaking LEP students in self-contained ESOL programs Broward County, Florida.
3. This study took place over a 6 week period. It may be that more time is necessary to allow for students to reap reading comprehension benefits from the instructional strategies.

Summary

The purpose of this study was to investigate the use of SM and SFA on the vocabulary development and reading comprehension of LEP students. The secondary purpose addressed teachers' ability to predict students' knowledge of targeted words. The teachers' challenge is to provide comprehensible instruction to a diverse group of students from a variety of cultural and linguistic backgrounds. Teachers need practical strategies to do so. Students need strategies that they can apply both in and out of their ESOL and content area classes.

Organization of the Remainder of the Study

A review of literature dealing with vocabulary development for LEP students is presented in Chapter 2. This chapter also describes qualities of effective vocabulary development strategies, and then describes two strategies (SM and SFA) having these qualities.

The methodology of the study is discussed in Chapter 3. This includes a description of the teachers and students who participated in the study, as well as the steps, procedures, and treatments used. In addition, workshops are described, and classroom observations reported.

Chapter 4 shows the results of the data collection for both students and teachers.

Chapter 5 presents a discussion of the findings, implications for practice, and recommendations for further research.

Ten appendices follow Chapter 5 which include the correspondence and forms used prior to the study, the teacher prediction surveys, and student samples of SM and SFA.

CHAPTER 2

REVIEW OF THE LITERATURE

In order to succeed in American schools, LEP students must learn the meanings of many English words, and how to use them properly in sentences (i.e., grammar). This chapter includes discussion of qualities of strategies conducive to effective vocabulary acquisition for LEP students. Two word[6] classification strategies, semantic mapping (SM) and semantic feature analysis (SFA), are recommended. These strategies may be useful to teachers of LEP students in order to make instruction more comprehensible.

Vocabulary Development for LEP Students

In his book, How to Learn a Foreign Language, Fuller (1987) says that learning a second language basically breaks down into two parts: learning the words, and learning how to string them together (e.g., grammar). In fact, it is impossible to learn a language without learning its vocabulary (Rivers, 1981, p. 1). This, of course, is an oversimplification, and doesn't mention the cultural component of learning a language. However, Fuller's simplistic definition of the process of learning a second language does point out the fundamental value of vocabulary to second language acquisition.

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[6] In this chapter the terms ***word*** and ***concept*** are used interchangeably (Johnson & Pearson, 1984; Pearson & Johnson, 1978).

History

Up to 1940, many second language educators believed that vocabulary learning was the key to language learning, and spent a great deal of class time teaching words (Davis, 1942, 1944). From about 1940-1970 vocabulary was "neglected in teacher-preparation programs," because it was "emphasized too much in language classrooms during the years before that time" (Allen, 1983, p 1). Some teachers believed that vocabulary should not be directly taught in class, because word meanings could only be learned through experience, and could not be taught adequately in class. In addition to knowing the meanings of words, one also had to know how they work together in sentences. Some teachers believed that grammar should be emphasized more than vocabulary, because students made too many errors in sentence construction if they learned too many words (Allen, 1983).

> Until very recently vocabulary learning has not received the primacy in EFL [English as a foreign language] teaching methodology or in published coursebooks [_sic_] that might be expected. There have been changing trends--from grammar-translation to direct method to the communicative approach--but none of these has emphasized the importance of the learner's lexical competence over structural/grammatical competence. (Summers, 1988, p. 111)

Current professional journals reflect more concern for effective vocabulary teaching. Some of the concerns include how to teach so many words with so little class time, what to do when some students know a word and others don't, what vocabulary teaching methods are most effective, and how to find out which words students know (Allen, 1983). Saville-Troike (1984) found that "vocabulary knowledge is the single most important area of second language (L2) competence when learning content through that language is the dependent variable; grammatical accuracy is of little importance to students' immediate academic needs" (p. 216). Therefore, vocabulary taught to LEP students should be related to their learning needs in the subject matter of their classes. "Since vocabulary development is directly correlated to overall growth in reading and general intelligence, it should receive the close attention of teachers as a high priority teaching area" (Cushenbery, 1985, p. 47).

Because the English language has had so many linguistic influences, "there are words for almost everything. English retains probably the richest vocabulary, and most diverse shading of meanings, of any language;" Bryson (1990) continues, "the complexities of the English language are such that native speakers cannot always communicate effectively" (p. 12). Because of its rich vocabulary, it is especially important for second language learners of English to develop strategies for increasing their English vocabulary. The many language influences on English, however, may also help LEP students with certain words such as ***pollution, nuclear, hydrogen, jazz, jeans, football*** and others, which have assimilated into an international vocabulary (Rivers, 1981). Second language learners may also benefit by learning to recognize cognates between English and their native language.

Boundaries of Meaning

Learning word meanings in a second language is not simply a matter of translating words. "One of your students' learning problems will be caused by the fact that the semantic areas in their native languages do not necessarily overlap with those of English" (Finocchiaro, 1989, p. 68). The meaning and use of a translated word may be quite different from one language to another. For example, the English word, ***garden,*** and the Spanish word, ***jardín***, may both refer to a place where flowers are grown. However, vegetables may be grown in a ***garden*** in English, but in Spanish, vegetables are grown in a ***huerta***. "It is necessary to know something about the customs and attitudes of native speakers if we are to know what words really mean to them" (Allen, 1983, p. 4). "A word in a second language is rarely precisely equivalent in meaning to a word in the first language" (Rivers, 1981, p. 463).

> Take the word ***wall***, for instance. Every language has a word for the thing that English calls a

> wall. But how people feel about walls can be very different in different parts of the world, and those feelings are part of the meaning of the word. Suppose someone says, "Our new neighbors have built a wall around their property." In many countries, that statement would not surprise anyone. In those countries, it is customary to build a wall around one's property; most people do so. In most English-speaking communities, however, houses and gardens are usually visible from the street. To the native speaker of English, the building of the wall might suggest unfriendliness. (Allen, 1983, p. 4)

Eskimos don't have one word equivalent to the English word, ***animal***; they distinguish among three types of ***animals***. One is for tame, and two are for wild animals--wild animals that are afraid of people, and wild animals that are not afraid of people (Tyler, 1986). To understand a word thoroughly, "a student must know not only what it refers to, but also where the boundaries are that separate it from words of related meaning" (Gairns & Redman, 1986, p. 13). Second language learners already apprehend many concepts; what they must learn is how best to express them in another language (Rivers, 1981). Thus, it is important to understand not only word denotations, but also their connotations in that language as well (Johnson & Pearson, 1984).

For bilinguals, terms in one language clearly educe corresponding terms in the other language (Nation, 1990). Considerable evidence suggests that first and second language concepts and symbols are stored together rather than separately, and that second language learners avail themselves with vocabulary and cognition from their first language. Cummins (1988) believes that it is this common underlying proficiency (CUP) which facilitates the "transfer of cognitive/academic or literacy-related skills across languages" (p. 156). It may also encourage interference and borrowing between first and second language vocabulary (Nation, 1990). Therefore, cross-cultural vocabulary development is an essential component of comprehension (Andersson & Barnitz, 1984).

Content Area Vocabulary

Words are names for objects and ideas that we confront in our world. "Naming establishes a right to existence" (Gusdorf, 1977, p. 48). When an idea has a name, only then does it become a concept capable of being discussed, analyzed and understood.

> People invent words because they need to name the things that they experience. The words people use tell us a lot about those people. Words tell us what people do, what they think about, what makes them laugh, what makes them angry, and what is most important in their world. (Tyler, 1986, p. 4)

"The vocabulary we understand and the vocabulary we can use varies in nature and in quantity from one person to another" (Rivers, 1981, p. 463). Subject area specialists (e.g., content area teachers) use precise words, and polysemous words, to express ideas and discuss phenomena within their specialty (Graves, 1987). Each specialty contains a large number of terms and symbols, which represent the language of that field. In some cases, specialists may find it difficult, or nearly impossible, to discuss certain ideas by using only terms common to the lay population (Bloom, 1956). Consequently, it is important for students to become cognizant of the meanings of key terms and symbols essential to understanding the content of their courses. As students are required to learn new concepts within a particular domain, the acquisition of appropriate word meanings becomes more significant (Drum & Konopak, 1987). Because the content area instructor has substantial schemata for the concepts within his field, technical language and terms should be taught by him (Cushenbery, 1985). Drum and Konopak (1987) suggest that vocabulary within a domain be taught in a systematic network rather through lists of isolated words. Students must understand the language, and the vocabulary, before they can think about or comprehend the subject matter. Content area teachers need to use and explain a wide variety of words, especially for LEP students who come from home environments where English is not the primary language used.

Student Lexicons

The difference between low and high-vocabulary students may be striking. A noted study on the size of English vocabulary from elementary to high school done by Smith (1941) found that the "highest first and second graders knew more basic words than did the poorest student in every other grade level up to and including the eleventh grade" (p. 329). Perhaps this is why Nagy and Herman (1987) warn that they are not aware of any research showing a successful method which helps students to become better independent word learners, nor will even the most ambitious and tactical approach to vocabulary development bring a low-vocabulary student up to the average. On average, students learn about 3,000-4,000 words each school year (Nagy & Herman, 1987; Smith, 1941). This means that a seventh grade low-level LEP student may be about 20,000-30,000 English words behind his peers of the same age and grade level. A student at the 25th percentile in vocabulary is approximately 6,000 words behind a student in the same grade at the 50th percentile (Smith, 1941). In Florida, a recently mainstreamed LEP student is often just above the 32nd percentile[7] on a standard nationally-normed assessment instrument.

In fourth grade the reading test performance of Hispanic children tends to drop below the performance of non-Hispanic white students. (Garcia, 1991). Nagy and Herman (1987) state that "for many children, the speech of parents and peers may be the single most significant source of vocabulary growth" (p. 32). If this is true, Hispanic LEP students who go home to Spanish-speaking environments, may not increase their vocabulary size at a rate comparable to students who go home to English-speaking environments which offer greater opportunity for English vocabulary repetition.

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[7] This is a required minimum score for LEP students to exit an ESOL program in Florida.

Cushenbery (1985) explains that there are at least five different types of vocabulary: listening, speaking, reading, writing and potential. "The growth of each of these vocabularies is contingent upon each other" (Cushenbery, 1985, p. 56). The first type of vocabulary acquired is through listening. A student whose home and/or school environments involve little English conversation will have limited English listening vocabulary, and all of the other vocabularies are partially dependent on the listening vocabulary. Parents and teachers are human dictionaries, and students frequently rely on them to provide explanations of words they don’t know (Summers, 1988). If the parents and/or teachers of a student speak (in English) in long and complex sentences, the student will have more exposure to many English words, and therefore "develop a larger pool of potential words from which to build an extensive speaking vocabulary" (Cushenbery, 1985, p. 45). Likewise, children who have more limited experiences with spoken words in English will probably have a lower proficiency of English spoken words. In most cases, reading vocabulary is larger than one’s speaking vocabulary. Reading vocabulary depends on the student’s ability to learn and apply word attack skills. For reading vocabulary, students need letter recognition skills and word recognition skills such as reading from left to right, and from top to bottom (Duffy & Roehler, 1989). The smallest vocabulary is one's writing vocabulary, and the largest vocabulary is one's potential vocabulary. "Potential vocabulary relates to all the words a person can understand when he or she is in a number of different situations or circumstances" (Cushenbery, 1985, p. 47). One's potential vocabulary includes words that one can use, understand or guess--as one does when making use of context, or knowledge of word affixes. Thus, English listening, speaking, reading, writing and potential vocabulary development are all essential elements of language development for LEP students. "Vocabulary enlargement is a lifetime process and is the responsibility of every teacher" (Cushenbery, 1985, p. 55).

Language development strategies help to ensure equal educational opportunities for LEP students in American schools. Strategies taught to LEP students in ESOL or content area classes for the purpose of increasing their ***mental lexicons*** (Aitchison, 1987) may help them to learn the English words necessary to understand the texts and discussions that take place in their content-area classes. The ***mental lexicon*** may be described as a personal dictionary in one's mind which carries both denotational and connotational information for many words. "To read at all it is necessary to recognize words and to recall their meanings" (Davis, 1944, p. 240). Surprisingly, Elivian

(1938) found that "students were not aware of the words they did not know, nor were they particularly adept at using context to locate definitions" (Drum & Konopak, 1987, p. 79). If students are not able to easily identify which words they don't know, or which words are most important to know, then teachers become largely responsible for selecting target words, and providing vocabulary learning strategies, which may benefit students most.

Vocabulary Acquisition

A priority of any vocabulary learning strategy must begin with developing an appreciation for words. Second, the strategy must integrate students' background knowledge with the new information (Durkin, 1989). Third, the strategy must make use of appropriately targeted words. Fourth, in order for students to integrate new concepts into their existing schemata, they must have opportunities for meaningful discussions about the concepts (Durkin, 1989). Discussion helps students to understand the connotation and denotation of word meanings. Discussion also enables students to engage in the deep processing necessary to comprehend a new concept. Fifth, effective vocabulary learning strategies provide opportunities for repeated exposures to words over time. Finally, in order to learn words, students must be provided with effective word-learning strategies. The final section of this chapter describes two vocabulary learning strategies, SM and SFA.

Appreciating Words

Why is vocabulary instruction so important? Quite often, the primary source of information in the content area classroom is the textbook. Thelen (1986) reports that a review of content area textbooks over the past five years revealed that many were poorly written and "inconsiderate" (p. 605) to the reader. Poorly written text is not incomprehensible, but it does require more effort and prior knowledge on the part of the reader. Given poorly written texts, students with higher vocabulary levels will tend to comprehend more than students with low vocabulary levels. Although vocabulary (i.e., knowing word meanings) and reading comprehension are clearly separate, distinguishable skills (Spearritt, 1972; Yap, 1978), causal links probably exist between vocabulary and reading comprehension (Blachowicz, 1986; Durkin, 1989; Thelen, 1986), and "vocabulary is likely to be the predominant causal factor" (Yap, 1978, p. 58). Students who don't know meanings of many words are probably poor readers. Such causal links are "compatible with the position of linguists who argue that the surface structure of a sentence (i.e., words and phrases) is determined before the deep structure (i.e., the meaning of the sentence) is analyzed" (Yap, 1978, p. 57).

Not only is vocabulary directly linked to reading comprehension, it is important for all of the four language skills--reading, writing, listening, and speaking (Cushenbery, 1985; Valette, 1977).

Students who know more words tend to have more general knowledge about the world and tend to score higher on IQ measures (Drum & Konopak, 1987; Fry, 1989; Just & Carpenter, 1987; Nagy & Herman, 1987; Smith, 1941). In fact, because vocabulary is highly dependent on a person's ability to educe word meanings through their experiences within the contexts from which they come, a vocabulary test is one of the ***best*** measures of a person's intelligence (Cushenbery, 1985; Drum & Konopak, 1987).

> Each new area of study, new hobby, new acquaintance, or other new experience offers the opportunity of expanding one's personal lexicon, both horizontally in the number of words for which a meaning is known and vertically in the depth of meanings for a single term. (Drum & Konopak, 1987, p. 74)

Students who are familiar with more words can comprehend more texts and more conversations (Criscoe & Gee, 1984; Smith, 1941). Without an understanding of a minimum number of words in a given language, one cannot read, write, listen or speak effectively in that language. But once a significant amount of language acquisition takes place, a new medium of communication unfolds for that person. Language teachers should not allow students to get by without continually improving their selection of words and phrases (Rivers, 1981). Teachers who help their students to develop an appreciation for words have led them to their first step of increasing their mental lexicons.

Background Knowledge and Schema Theory

Research shows that there is a strong correlation between reading comprehension and vocabulary knowledge (Davis, 1944, 1968; Nagy & Herman, 1987; Stahl, 1986; Stahl, Burge, Machuga, & Stecyk, 1992). This relationship has been labeled the ***knowledge hypothesis*** (Anderson & Freebody, 1983).

> The knowledge hypothesis is based on a schema-theoretic view of reading comprehension, which posits that knowledge does not consist simply of an unstructured set of individual facts, but rather of organized, interrelated structures or schemata. Knowing where a piece of information fits in is an indispensable part of understanding it. (Nagy & Herman, 1987, p. 28)

The postulate of schema theory is that knowledge is stored in the brain in schemata form, a unique network of relationships between all the words and concepts a person knows. Because each person's cumulative set of life experiences is unique, so too is his schema (Pearson & Spiro, 1982).

Schema theory is a reading theory which posits that for reading material to be comprehensible, it must fit into the schemata (i.e., background knowledge) of the reader (Finocchiaro, 1989). Schemata "are the mental scaffoldings around which we organize information" (Criscoe & Gee, 1984,

p. 207). Schema, which was first discussed by Bartlett in 1954, refers to the organization of our past experience (Saunders, 1991). "Each human brain operates as an amazing filing system that stores everything a person knows about the world" (Tyler, 1986, p. 61). Input is basically guided into one's schemata through either bottom-up or top-down processing (Carrell, 1984). Bottom-up processing is data-driven, whereas top-down processing is conceptually driven. The input, therefore, may influence the type of processing one uses to analyze and synthesize the incoming information (Lebauer, 1985). Isolated bits of knowledge, for example, are stored in organized categories through the bottom-up procedure (Criscoe & Gee, 1984).

When processing new information, readers continually rely upon their background knowledge to make and test hypotheses (Lebauer, 1985). Learning is the process of fine-tuning and restructuring one's schemata according to new information which is received (Pearson & Spiro, 1982).

> If we think of cognitive structure as a filing cabinet and the existing ideas (schema) within as file folders, then it is reasonable to suppose that *if* the learner's cognitive structure is organized or *if* the learner is told where and how the new material fits and can be related to existing schema, the new idea should become part of the student's existing cognitive structure. (Thelen, 1986, p. 604)

Pearson and Gallagher (1983) distinguish between schema ***acquisition*** and schema ***activation***. If a student has no prior knowledge directly related to the topic of interest, the teacher must activate other related concepts and associate those concepts with the new information, thereby facilitating student acquisition of a new concept (i.e., learning). If however, the student already has a great deal of background knowledge and schema on a given subject, then the teacher need only activate that schema.

In general, a literate adult has more background knowledge to draw upon than a young reader. Therefore, a young reader reading the same passage as an adult, in many cases, will not be able to construct mental representations of the same passage in as much depth or breadth as an adult reader (Anderson, Spiro & Anderson, 1978). Because students are exposed to new information in content-area classes, they usually don't have well-developed schemata of many of the concepts (Criscoe & Gee, 1984; Drum & Konopak, 1987). Teachers can provide organizers or semantic networks for students to use as frameworks for new concepts (Criscoe & Gee, 1984). If facts are to be useful, they must be organized (Just & Carpenter, 1987). They should be organized according to the students' schemata which serve as anchors for students to relate new information to the known (Saunders, 1991).

With regard to LEP students, Andersson and Barnitz (1984) discuss "the need for teachers to facilitate reading comprehension by considering cross-cultural schemata" (p. 105). What a word connotes in one language may be different from what it connotes when translated. How do second language learners store words? Nation (1990) suggests that low level LEP students store words according to their sounds. They may, for example, connect words such as *hors*e and *hous*e. Therefore, similar sounding words, or words with similar spelling, should not be introduced together for low level LEP students. Higher level LEP students tend to store words according to their meanings, and boundaries of word meanings are different from person to person and from language to language.

If a student gets to know the "major ideas, schemes, and patterns by which phenomena and ideas are organized," Bloom (1956) contends, "he has a means of relating and organizing a great deal of subject matter and as a result should have more insight into the field as well as greater retentiveness for it" (p. 75). Bruner (1977) stresses the importance of showing students how things are related. Unless isolated details are placed into appropriate structures showing associations, students quickly forget them. "Knowledge one has acquired without sufficient structure to tie it together is knowledge that is likely to be forgotten." This, he believes, is the "heart of the educational process--the continual broadening and deepening of knowledge in terms of basic and general knowledge" (Bruner, 1977, p. 17).

In order for efficient learning to take place, students must know the broad fundamental structure of a given concept, before they can generalize what they have learned to what they will experience later. Tyler (1949) points out the need for organizing the entire framework of curricular learning experiences to achieve effective instruction. A way to organize the scheme of a social studies curriculum, for example, might be to begin with the community and move out into the wider world (Tyler, 1949). Teachers should do the same when they are planning a school year, a unit, or even a lesson. Learning experiences should occur in logical sequences.

Background knowledge and ***prior knowledge*** are often used interchangeably (Antonacci, 1991; Ausubel & Fitzgerald, 1962; Pearson & Gallagher, 1983; Pearson & Spiro, 1982). Research shows a relationship, not only between reading comprehension and vocabulary knowledge (Schumm, 1992) (i.e., the knowledge hypothesis), but also a relationship between reading comprehension and prior knowledge (Ausubel & Fitzgerald, 1962; Pearson & Gallagher, 1983; Schumm, 1992), and between vocabulary knowledge and background knowledge (Thelen, 1986). Although both vocabulary knowledge and prior knowledge are important factors in reading comprehension, they differ in their use to readers. "Vocabulary proficiency enables readers to recall smaller units of text (microprocessing), while prior knowledge helps readers organize and evaluate the relative importance of these units (macroprocessing)" (Schumm, 1992, p. 31). Instructors, therefore, when teaching vocabulary, should tap the students' prior knowledge to determine what students already know which may serve as an anchor or way of linking and understanding the new concept to what is already known.

"Meaningful learning occurs when the learner attempts to relate new information to what he or she already knows" (Thelen, 1986, p. 603). Thelen describes an example of rote memorizing which is not meaningful learning. A fourth grade student proudly recited all of the county seats in Maryland. When she finished, she was asked to explain what a county seat was. After a moment of silence, she responded, "We don't have to know that!" It's very likely that this information was not incorporated into her cognitive structure, and to her, the material was quite meaningless.

Each student may have very different levels of knowledge about any given word or concept. Goodman (1970) describes five situations where printed words present problems for students. First, the student may have the word in oral, but not his visual, vocabulary. Second, the student may know the concept but not the label. Third, both the concept and the word may be unknown. Fourth, the concept and word are known to the student only in a rote manner. Fifth, the student understands the concept, but cannot pronounce the word. (Thelen, 1986). These are very similar to Graves'

(1984) six states of what a student might know about any given word. First, the student may be able to describe the word, but be unable to read it. Second, the student may be able to understand the concept, but not be sufficiently familiar with it to use it. Third, the student may know the idea of a word and have experience with it, but be unfamiliar with the particular term to describe it. Fourth, the student may know only part of the meaning of the word, but not know the connotations of the word. Fifth, the student may know one meaning for a word, but not a different meaning that the same word holds in a different context. Finally, the student may not know either the concept or the label (Drum & Konopak, 1987). So, there are many levels of ***knowing*** a word. Graves and Prenn (1986), referring to Beck et al., describe three simple levels of word knowledge--unknown, acquainted, and established. Spanish-speaking LEP students who know an above average number of Spanish words for their age and grade level must learn the words in English. They must also learn the English connotations and boundaries of meaning. Spanish-speaking LEP students whose word banks are below average in Spanish must learn not only many new concepts and their schemata, but also the English words for the new concepts, and their connotations and meaning boundaries.

LEP students whose mental lexicons fall behind their peers may benefit from vocabulary learning strategies, especially in content area classes. Each word represents a unique set of experiences or lack thereof in each student. Students' prior knowledge of concepts must integrate with the text or conversation in order for comprehension to take place (Criscoe & Gee, 1984; Davis, 1944; Heimlich & Pittelman, 1986; Johnson & Pearson, 1984; Johnson & von Hoff Johnson, 1986; Nagy, 1987; Pearson & Johnson, 1978; Pearson & Spiro, 1982; Sternberg, 1987). Such integration can take place only if the student understands, through prior experience, a significant number of words in a text or conversation. Prior knowledge of key concepts precedes comprehension. In a 1962 study, Ausubel (1962) found that general prior knowledge in a domain significantly improved student comprehension of new information in the same domain. General background knowledge in a subject facilitates learning of unfamiliar knowledge in the same subject area (Ausubel, 1962). "Experience is what we are referring to when we say that a person is good at reading 'between the lines'" (Pearson & Johnson, 1978, p. 44).

For students learning new information, and lacking in appropriate related background knowledge, instructional strategies which focus on schema acquisition are needed more than those which focus on schema activation. (Pearson & Gallagher, 1983). It is important not only to activate, but also to tap students' prior knowledge. Activating students' prior knowledge provides association for them, and tapping their prior knowledge through discussion allows for deeper processing of information.

In summary, with regard to background knowledge, the following four questions may be useful to teachers of LEP students when they are teaching a new word or concept:

1. Is this a new concept for this student?

2. If this is a new concept for the student, what related background knowledge may be tapped to help the LEP student to understand this word or concept?

3. Assuming that the teacher is speaking only English to LEP students, what are some effective strategies to activate or tap appropriate prior knowledge?

4. What are some effective strategies that students may use to make links between prior knowledge and the new concept?

Target Word Selection

Because teachers already possess massive schemata in their area of specialization, it is sometimes difficult for them to pinpoint the gaps in their students' knowledge (Nagy & Herman, 1987). Students, themselves, may not know which words they don't know. In a 1938 study, Elivian (1938) found that "children were generally unable to recognize words they did not know" (p. 55).

Many vocabulary instruction techniques call for the teacher to select the words or concepts to be taught to the students (Bonds, 1989; Nagy 1988). Some even assume that the teacher is able to judge which words students know or don't know, and then select words in a text which would most facilitate student comprehension of that text (Thelen, 1986). In describing how to use SFA as a vocabulary-building activity, Johnson and Pearson (1984) begin with a first step, "Organize a list of words that share some common features" (p. 14). The assumption is that the teacher is the one to select and organize the list of words because the second step begins, "Assisted by the children, begin to list some features commonly associated with at least one of the vehicles" (p. 14). In an article describing SFA, Anders and Bos (1986) write,

> The first step in developing an SFA strategy is to thoroughly read the assignment that will be given to the students. The purpose for reading is to determine the major ideas students will probably understand and interact with in this particular assignment. (p. 612)

If teachers are to be responsible for selecting target words, the assumption is that teachers (a) know which words in a passage are important for the students to understand the text, and (b) that teachers can predict which words the students know and don't know. Although SM, SFA, and many other vocabulary learning strategies suggest that teachers select the words to teach, none reviewed in this study reported evidence that teachers are good predictors of what background knowledge students have or do not have with given words or concepts (see Anders & Bos, 1986; Cushenbery, 1985; Dale & O'Rourke, 1986; Heimlich & Pittelman, 1990; Stahl, 1986).

Some experts suggest that teachers should teach the most difficult words, the polysyllabic words, and the low frequency words. These are, most likely, the "stopper" words (Anders & Bos, 1986, p. 610). ***Stopper*** words are those which cause a student to stop reading because he does not know the word. Anders & Bos (1986) suggest that vocabulary instruction should not be based on word frequency or difficulty, but words should be taught because they are the main ideas of a text or lesson.

Blachowicz (1986) suggests that teachers do a "knowledge rating" (p. 645) before teaching words. Teachers ask students to rate words into three categories: (a) can define, (b) have seen/heard, and (c) ? (i.e., do not know), or as Dale and O'Rourke (1971) suggest: (a) know, (b) partially know, (c) don't know. Although teachers do have some guidelines to follow as to which words to teach, they may or may not be effective at selecting the most useful words for LEP students to learn. Students may be a good source for selecting target words. More research is needed in the area of target word selection for LEP students, especially in content area classes. There are so many words that LEP students need to learn, but only a limited amount of class time to do so.

Discussion

Students' prior experiences are made up of a combination of life and educational experiences (Abell, 1992). Abell contends that a person's experiences are grounded in a cultural context of class, gender, race and ethnicity which are created through the influence of our family, community and schools. "Each person comes to every course not as a tabula rasa but as a complex human being with deeply held beliefs and values" (Abell, 1992, p. 114). She describes a "culturally responsive educational process" (p. 121) by which the unique perspectives of her students become an integral part of the course content. She asserts, through her pedagogical model, that, through discussion, students create connections as well as contrasts among themselves and other class members. This provides a variety of learning experiences which facilitate the expression and development of each learner's differing views and perspectives, "illuminating varied contexts of each speaker's life. This presence of many perspectives in class provides a rich milieu for intellectual activity" (Abell, 1992, p. 133). Other researchers also contend that discussion is an integral component of vocabulary learning (Stahl, 1986; Wright, 1972), and Wright (1972) adds that discussion should be fun.

Research in language acquisition and information processing has led to a better understanding of the importance of prior knowledge for LEP students to comprehend English when reading or listening. Tapping relevant background knowledge which leads to comprehension provides evidence for the ***schema activation hypothesis*** (Pearson & Gallagher, 1983). Given familiar contexts, students can build upon their prior knowledge. Discussion helps to facilitate this process (Klein, 1988).

Connotation-Denotation

Stahl (1986) suggests that there are three principles involved in effective vocabulary instruction. First, give both context and definitions of targeted words. Second, encourage deep processing of the words. Third, give multiple exposures to the words. Principle one demonstrates that knowing a word consists of contextual information and definitional information (Stahl, 1985). Stahl suggests that both contextual and definitional information are necessary to improve comprehension. Contextual information is achieved through experiencing a word in the context of a sentence or in a picture, for example. Exposure to a word in a variety of contexts provides a deeper understanding of a word. This may be done simultaneously or through multiple exposures. Definitional information is demonstrated by knowing antonyms and synonyms of a word, by knowing the meaning of its prefix, suffix, or root, or by being able to give a dictionary definition[8]. "A good up-to-date dictionary is your best source of information about words" (Tyler, 1986, p. 48), and thesauri can be just as useful. The contextual and definitional distinction that Stahl makes is similar to connotative-denotative distinctions made by Drum and Konopak (1987).

Deep Processing

Stahl's second principle (1986) suggests a need for deep processing of a word. The more connections that a student makes between a new concept and his prior knowledge, the better his understanding will be of the new word. Stahl describes three levels of vocabulary processing: association, comprehension, and generation (Stahl, 1985 & 1986)

Association

Knowing an association means knowing a synonym of a word, or a single context for a word. Association is the most shallow type of word processing (Stahl, 1986). Pearson & Johnson describe four types of simple associations: synonyms, antonyms, associations, and classes, and two types of complex associations: analogies, and connotative-denotative. When new words are associated with familiar words, the familiar words inherit those features until further information modifies the schema (Elshout-Mohr, 1987). For this reason, second language learners tend to overlap word meanings between their languages. "The second language learner first classifies second language meanings according to the mother tongue. As the learner discovers more about the second language culture, these meanings change" (Nation, 1990, p 34). "The associations attached to a word affect the way that it is stored in the brain, and this will affect the availability of the word when it is needed" (Nation, 1990, p. 42). O'Malley and Chamot (1990) describe an elaboration learning strategy whereby students relate new information to prior knowledge, relate different parts of new information to each other, or make meaningful personal associations with the new information. Because second language learners rely on first language vocabulary, some second language meanings may become fossilized, that is, they may always keep their first language meaning for a second language word. Later, alterations may be made on abstract features which are better suited to the second language culture (Nation, 1990).

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[8] See Summers, 1988 for a discussion of the role of dictionaries in language learning.

Comprehension

Comprehension processing is deeper than association processing. "Comprehension depends to a large extent on students' abilities to categorize, organize, store, and retain information" (Criscoe & Gee, 1984, p. 207). After a student's prior knowledge is tapped and the new information is associated with what he already knows, he then refines and reformulates (Blachowicz, 1986) boundaries of meanings of those concepts; this is comprehension.

Comprehension is revealed in activities such as correctly using the word in a cloze exercise, categorizing the word into an appropriate semantic field, or properly using the word in a sentence.

> To the degree that new information 'fits' into preexisting schemata we have **assimilated** the new information. When that new information does not fit, we can ignore it (as we often do to preserve stereotypes), or we can modify our schemata to **accommodate** that new information. (Pearson & Johnson, 1978, p. 47)

"Assimilation occurs when we are able to categorize a new example as belonging to a preexisting schema" (Pearson & Johnson, 1978, p. 35). In order for proper assimilation or accommodation to take place, the student must know where a word belongs in a schema, and what attributes, if any, must be accommodated to accurately assimilate the new information This is the process of meaningful learning.

"Comprehension is building bridges between the new and the known" (Pearson & Johnson, 1978, p. 24). "Comprehension is active, not passive; that is, the reader cannot help but to interpret and alter what he reads in accordance with prior knowledge about the topic under discussion" (Pearson & Johnson, 1978, p. 24). Past experiences are continually being modified (Britton, 1977).

Ausubel describes three conditions for meaningful learning to take place.

> (1) The material to be learned must be capable of being related; (2) the learner must possess relevant ideas to which this new material can be related; and (3) the learner must actually intend to relate these new ideas to those he already possesses (Thelen, 1986, p. 605).

If students' values or prior experiences are incongruous with the new information, the learner may not incorporate the new concepts with his conceptual network. The values of one's culture may sometimes interfere with the third step.

Piaget has postulated that concepts are stored in people's minds in schemata. In his work with developmental psychology, he used the terms ***schema, assimilation,*** and ***accommodation***. Comprehension involves relating the new to the known, and is therefore named the ***new to known principle*** (Pearson & Johnson, 1978).

Generation

Generation is the deepest level of processing. Generation requires a student to provide a definition in his own words, or use the word in a meaningful written or spoken sentence. Generation can be achieved effectively by having students make a semantic map, complete an SFA grid, or create images or analogies with words (Johnson, 1984; Johnson & Pearson, 1984; Pearson & Gallagher, 1983; Stahl, 1986). All three levels--association, comprehension, and generation are important to the deep processing needed to acquire words.

Repeated Exposures

Principle three (Stahl, 1986) requires that students have multiple exposures to each word. The first instructional encounter only acquaints the student with the word (Graves & Prenn, 1986). Only through repeated exposures to a word can it enter a person's active vocabulary, "whether in first or subsequent language acquisition" (Summers, 1988, p. 112). With a greater number of exposures to a word in a variety of contexts and settings, the greater the probability that the student will have significantly improved his comprehension (Pearson & Gallagher, 1983; Stahl, 1986). Even if students appear to comprehend their first exposure to a new word through a vocabulary instruction strategy, this does not guarantee that they will be able to perform successfully on a multiple choice exam with the target vocabulary (Levin, Johnson, Pittelman, Levin, Shriberg, Toms-Bronowski & Hayes, 1984). A number of exposures in a variety of contexts produces incremental gains (Drum & Konopak, 1987; Graves & Prenn, 1986). Repetition in a variety of meaningful contexts has a gradual cumulative effect on schema acquisition (Nagy & Herman, 1987; Pearson & Gallagher, 1983; Stahl & Fairbanks, 1986). Repeated exposures does not mean drill exercises. "Once new words are introduced and taught, they should be included in succeeding lessons to provide sufficient learning reinforcement" (Cushenbery, 1985, p. 49). "Repetition of the use of words in a number of familiar contexts is imperative if a lasting understanding of the words is to be realized" (Cushenbery, 1985, p. 49). Stahl et al., (1992) report that about twelve encounters with a new word reliably improves comprehension, whereas four does not. Plenty of repetition is necessary (Wright, 1972).

Nagy & Herman (1987) state that "for many children, the speech of parents and peers may be the single most significant source of vocabulary growth" (p. 32). If this is true, Hispanic LEP students who go home to a Spanish-speaking environment, may not increase their vocabulary size at a rate comparable to students who go home to an English-speaking environment which provides greater opportunity for English vocabulary repetition in meaningful contexts.

Time

So, down to the ***bottom line***. How much time does vocabulary instruction require? "Mastering the meanings of words is frequently a challenging and time-consuming task" (Graves & Prenn, 1986, p. 596). Learning words takes time from other learning objectives, but based on the fact that vocabulary is highly correlated to reading comprehension and intelligence, time spent on effective vocabulary instruction, most likely, is time well spent. Because of these connections, "it is both time and energy efficient, as well as theoretically suitable, to integrate vocabulary instruction with work on comprehension" (Blachowicz, 1986, p. 644).

Due to in-class and out-of-class time limitations on both teachers and students, only a limited amount of time can be spent on any given term. Durkin's 1979 study found that less than one percent of class time was devoted to vocabulary instruction and vocabulary review in elementary reading programs (Graves, 1987). Graves (1987) states that from his fourteen years of experience in working with secondary content area teachers in a variety of subject areas, he believes that even less vocabulary instruction occurs at the secondary level.

So, how exactly much time is adequate? Stahl, et al. (1992) set out to find the minimal conditions in which vocabulary instruction could improve comprehension. They suggest that seven minutes is adequate, and that Beck et al.'s (1983) study which used over eighteen minutes per word may very well be the "Rolls-Royce" (p. 20) of vocabulary instruction. However, they add that "a Rolls-Royce will get you where you want to go, but it is not practical transportation for the masses" (p. 20). Because the amount of time spent on each word highly correlates with the effect of the instruction, increasing the amount of time spent on a word may have a significant effect on comprehension of that concept. Because of the high cost in class time needed for individual word acquisition (Graves & Prenn, 1986), vocabulary learning strategies should be taught in class with the goal of having students become motivated to learn words independently.

Each vocabulary instructional method has its costs and benefits. "A teacher can directly teach words a lot faster than students can look up their meanings" (Graves & Prenn, 1986, p. 599); whereas, assigning students to learn words independently as homework, without the benefit of classroom discussion, takes very little class or teacher time. Learning new or difficult concepts is costly to both teacher and students, but doing so reaps many benefits (Graves & Prenn, 1986).

Summary

In order for vocabulary acquisition to take place, teachers must first select the target words and an effective vocabulary instruction method which activates students' prior knowledge. Effective vocabulary instruction requires students to understand both connotations and denotations, engage in deep processing, and experience repeated exposures to a word in a variety of contexts. Studies of vocabulary comprehension which involve deep processing of information, balancing definitional and contextual instruction, and providing for multiple exposures are the most effective (Gipe, 1978; Stahl, 1985; Stahl, 1986). Students who are self-motivated to use effective vocabulary learning strategies outside of class may benefit by continually increasing their mental lexicons. By increasing their mental lexicons, LEP students may improve their scores on standardized tests, and improve their comprehension in content area classes (Nagy & Herman, 1987).

Vocabulary Learning Strategies

Once target words are selected, an effective vocabulary learning strategy must be used to learn them. "Language learning styles and strategies appear to be among the most important variables influencing performance in a second language" (Oxford, 1989). Strategy training may be particularly useful for learning words, terms, definitions, and concepts (Osborn, Jones, & Stein, 1985). Oxford (1989) describes six types of language learning strategies for LEP students--metacognitive, affective, social, cognitive, memory, and compensation. Vocabulary development makes use primarily of metacognitive and cognitive strategies. Metacognitive strategies involve organizing, focusing, and evaluating one's own learning; cognitive strategies involve linking new information with existing schemata and analyzing and classifying it (Oxford, 1989).

One of the most traditional vocabulary learning methods is the dictionary-sentence method. Students look words up in a dictionary, write out the definitions, and then write sentences using the words (Graves & Prenn, 1986; Nagy, 1988). From the teacher's point of view, this method is "probably the least costly means of teaching students words" (Graves & Prenn, 1986). However, this method has been repeatedly criticized as being extremely weak. Students develop strategies to write sentences such as, "This is a..." (Stahl, 1986, p. 664), or "I saw a..." (Blachowicz, 1986, p. 643), just to complete the assignment. This technique does not necessarily help students to expand their knowledge of words. This method is just one example of a common, yet ineffective strategy used by many teachers. In general, "students are not given strategies and practice to help them do tasks which will contribute to their success throughout their academic careers" (Giles, 1989, p. 8). In current teacher-preparation programs, more attention is being given to strategies for teaching vocabulary (Allen, 1983). Comprehensible instruction breaks down when students and teachers do not use appropriate words. When unknown words are stumbling blocks to students' comprehension, it is only reasonable to provide them with strategies to understand those words (Summers, 1988). Students need strategies which activate and tap their prior knowledge and help them comprehend the material.

Word study may focus on the semantics of words or the form of words, such as suffixing, pronunciation and spelling (Elley, 1991). Grave's second goal (1987), learning to learn words, involves using context, learning and using word parts, using the dictionary and thesaurus, developing an approach to dealing with unknown words, and adopting a personal approach to building vocabulary. Students may benefit by learning word morphemes (i.e., affixes) (Rivers, 1981). Learning word morphemes, suffixing, and spelling is the microprocessing of vocabulary learning. Learning word denotations and connotations is the macroprocessing of vocabulary learning. In addition to using dictionaries (unilingual and bilingual) and thesauri, Rivers (1981) suggests that encyclopedias should be used regularly in language courses. In addition to the dictionary-sentence method, there are many other methods used for learning words such as: unscrambling groups of letters to form a word, drawing analogies among words, doing crossword puzzles, learning dictionary skills, matching words with other words or definitions, supplying missing letters in words, completing cloze exercises, transforming words into different parts of speech, making word lists or cards, doing affixing exercises, taking spelling tests, and writing words in contextual sentences. Learning strategies and learning how to apply them is an important part of the overall vocabulary learning process, but once a strategy is taught, vocabulary instruction should be faded out (Osborn, Jones & Stein, 1985). Regardless of which strategies they choose, students need to develop some word-learning strategies which they can use on their own (Graves, 1987). Graves continues, students also need to develop a positive attitude toward words which will encourage them to use strategies to increase their lexicons. Language teachers must arouse students to become interested in learning words on their own, and provide strategies for them to do so (Rivers, 1981). Teachers must be role models and show students that word-learning activities are valuable (Cushenbery, 1985).

Should students acquire vocabulary through natural learning (e.g., reading, conversation) (Krashen & Terrell, 1983) or through direct instruction (Chall, 1987; Graves, 1987; Nation & Coady, 1988)? Graves (1987) acknowledges that most words that students learn, they somehow do so independently. However, Graves stresses that students can benefit through direct instruction which leads to developing, in each student, a personal approach to learning words independently.

An important consideration when teaching vocabulary is whether or not to teach words in semantic groups. Some researchers suggest that semantic fields and thematic units are useful for classroom applications (Durso & Coggins, 1991). Gairns and Redman (1986) suggest grouping lexical items by semantic field, or by phonological or grammatical sets[9]. Marzano and Marzano (1988) also advocate the use of grouping words into semantically related fields for purposes of teaching. This may help to build the students' schemata of various word groups. Because the meanings of words are linked to their domain(s), Drum and Konopak (1987) suggest that vocabulary instruction be presented in a systematic network rather than words in isolation. Other experts agree that "retention is optimal when vocabulary items are presented grouped by semantic field, clusters or groupings of words that are conceptually related or subsumed under a general term" (Spinelli, Dearborn & Siskin, 1992, p. 307). However, some research suggests that grouping will cause meaning to interfere (Nation, 1990), and do not recommend thematic grouping for teaching related words.

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[9] See Gairns and Redman (1986) for discussion about their thirteen groupings: 1) items related by topic; 2) items grouped as an activity or process; 3) items which are

Classification

Classification "is the most common and certainly one of the most important forms of human thinking" (Pearson & Johnson, 1978, p. 61). It "plays a key role in relating new knowledge to existing knowledge" (Pittelman, Heimlich, Berglund & French, 1991, p. 4). If a person in the woods

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similar in meaning; 4) items which form 'pairs'; 5) items along a scale or cline, which illustrate differences of degree; 6) items within 'word families' i.e. derivatives; 7) items grouped by (a) grammatical similarity and (b) notional similarity; 8) items which connect discourse; 9) items forming a set of idioms or multi-word verbs; 10) items grouped by spelling difficulty or phonological difficulty; 11) items grouped by style; 12) an item explored in terms of its different meanings; and 13) items causing particular difficulty within one nationality group. (p. 69) sees a strange animal running towards him at night, he may back off with fear, or perhaps begin running unless someone tells him that it is a dog. When he hears that it is a dog, it instantly triggers his schema for dog, assigns the linking attributes, and his fears are calmed. After classifying the animal, he no longer imagines that it might be a wild wolf, a skunk, or a porcupine (Pearson & Johnson, 1978). This type of classification can take place because this person has had previous experience with dogs. He has seen dogs of various shapes, sizes, and colors. He has seen beagles chase rabbits. To him, labradors and poodles are house pets, and house pets aren't something to fear. To someone else, a dog might very well be something to fear. To some, snakes are tranquil house *pets*, not to be feared; to others, they are not *pets*, and they do evoke fear.

> What we call things and where we draw the line between one class of things and another depend upon the interests we have and the purposes of the classification. For example, animals are classified in one way by the meat industry, in a different way by the leather industry, in another different way by the fur industry, and in a still different way by the biologist. None of these classifications is any more final than any of the others; each of them is useful for its purpose. (Hayakawa, 1978, p. 200)

Pearson and Johnson (1978) point out that, "classification is not only convenient, it is absolutely essential for dealing with one's world" (p. 62). They add that "classification activities are among the most helpful a teacher can direct or assign to students" (p. 62).

Classification activities can be useful at "any developmental level from preschool through graduate school" (Pearson & Johnson, 1978, p. 62).

> One of the most basic ways we organize information is by grouping similar ideas together. Think of the way a supermarket is organized. Similar types of products are shelved together. There might be an entire aisle of breakfast cereals, another one of coffee, a section where all the spices can be found, and a whole refrigerator aisle full of dairy products. All of the products in a given section have something in common, yet they are not exactly the same. (Tyler, 1986, p. 61)

Just as no two grocery stores stock the exact same product lines, or arrange the products in exactly the same aisles and locations on shelves, no two minds store similar information in exactly the same way. The storage, or schemata, is strongly affected by prior experiences. Advance organizers, introduced by Ausubel in the early 1960's, facilitate meaningful verbal learning in two ways

> First, they explicitly draw upon and mobilize whatever relevant subsuming concepts are already established in the learner's cognitive structure and make them part of the subsuming entity. Thus, not only is the new material rendered more familiar and meaningful, but the most relevant ideational antecedents are also selected and utilized in integrated fashion. Second, advance organizers at an appropriate level of inclusiveness provide optimal anchorage. This promotes both initial incorporation and later resistance to obliterative subsumption. (Ausubel, 1960, p. 270)

In general, advance organizers tend to help students with reading comprehension (Pearson & Gallagher, 1983) and vocabulary (Johnson & Pearson, 1984). Al-Baili (1988) points out the "necessity for readers to organize, integrate, and group information into experimental and associated patterns in order to comprehend information in texts" (p. 1).

Whenever students are asked to classify words, it is important that they have an opportunity to respond to those which they ***get wrong***. Durkin (1989) recalls one of her experiences:

> The task was to read three words listed in each of nine boxes and to cross out the word that did not belong with the other two. One box listed ***dog, bird***, and ***car***. When one girl was asked why she crossed out bird--the "correct" answer is car--she explained, "You need a license for a dog and a car but not for a bird. (p. 337)

Classification is a social necessity, and different necessities produce different classifications. "One of the most important things we must recognize is that our classification schemes are arbitrary and are tied to our interests"[10] (Hayakawa, 1978, p. 209).

Klein (1984) recommends three classification activities--branching trees (similar to SM), abstraction ladders, and category fixing. Pearson & Johnson (1978) list seven categorization activities which provide opportunities for students to classify unfamiliar words into familiar classes, or vice versa: (a) straightforward categorization,

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[10] To demonstrate this to students, Hayakawa recommends the following classification activity: Using a collection of a few dozen household objects, ask individual students to classify the objects and then ask several students to present their rationales for their groupings to the class. Each student will make different categories depending on his prior experience(s) with each object. This activity helps students to become more flexible in their thinking about the meanings of words.

(b) a second version of straightforward categorization, (c) omission, (d) vocabulary review, (e) common elements, (f) giant pyramid, and (g) concentration. In a later work, Johnson & Pearson (1984) revised their list of seven classification categories to the following: (a) synonyms, (b) antonyms, (c) denotation/connotation, (d) SM, (e) SFA, (f) analogies, and (g) homophones.

Organizational strategies are useful for "building connections between related ideas" (O'Malley & Chamot, 1990, p. 50). Words can be grouped by function or by semantic category. In their cognitive academic language learning approach (CALLA), O'Malley and Chamot suggest that vocabulary learning through advance organizers is a metacognitive strategy. Vocabulary learning by grouping is a cognitive strategy. Finally, vocabulary learning by elaborating (through discussion) is a social affective strategy. Each of these strategies may be useful in vocabulary learning for different purposes.

Student involvement is an essential step in using graphic organizers to clarify and reinforce the concepts that are being taught (Thelen, 1986). It is important that students' background knowledge become integrated with the new information that the teacher is presenting. Following a lesson, students should analyze relationships among vocabulary, and arrange, and perhaps rearrange the relationships with the aid of graphic organizers so that they clearly understand the concepts.

Bloom (1956) points out the importance of students knowing the "classes, sets, divisions, and arrangements which are regarded as fundamental or useful for a given subject field" (p. 71).

> As a subject field, problem, or topic becomes well developed, individuals working on it find it useful to develop classifications and categories which help to structure and systematize the phenomena. These classifications and categories are likely to have an arbitrary and artificial flavor to the student, although the specialist finds them useful and even fundamental for his work. The individual student is expected to know these classifications and to know when they are appropriate. (Bloom, 1956, p. 71)

Macnamara (1982) discusses a semantics theory which suggests that word meanings are no more than a set of semantic features--that ***yellow*** and ***sings*** are features of, and therefore part of the meaning of ***canary***. This theory suggests that a plucked canary is not a canary. Other theoreticians believe that there is a looser connection between semantic features and truth. This is sometimes called the "cluster theory of meaning" (Macnamara, 1982, p. 199). This theory maintains that not all features are essential to the correct use of the term. What is necessary is a "weighted sum of features true of the object being described" (Macnamara, 1982, p. 199). Such network and feature exceptions, as described by these theories, will undoubtedly spark disputes about the meanings of the target words among students using SM and SFA as vocabulary learning strategies.

Semantic Mapping and Semantic Feature Analysis

Two word classification strategies will be discussed in detail--SM and SFA. Both strategies provide frameworks for students to organize relationships between concepts, while integrating their prior knowledge from any cultural background. Both strategies take "advantage of the way the brain organizes information" (Pittelman, Heimlich, Berglund & French, 1991, p. 5). Both help to distinguish among the boundaries of word meanings. They both provide a structure to discover examples and nonexamples of concepts (Graves, 1986). However, one of the major differences between the strategies is that SM focuses on the similarities among related words, whereas SFA contrasts differences among related words. SFA is particularly useful in comparing attributes among several related words (Pearson & Johnson, 1978). Although this study focuses on using SM and SFA as vocabulary learning strategies, they may also be used for a variety of other learning objectives, such a brainstorming, and prereading or prewriting activities. SM and SFA can be used to combine reading, writing, listening and speaking activities. One useful technique which may be used with both SM and SFA is to have students use one color ink or pencil for a prevocabulary activity and then a second color of ink or pencil as a follow up activity (Blachowicz, 1986), so that they, and the teacher, can see their growth.

Semantic Mapping

Semantic mapping (SM) (Antonacci, 1991; Heimlich & Pittelman, 1986; Pearson & Johnson, 1978; Saunders, 1991) which is often used interchangeably with ***mapping*** (Daines, 1982; Hanf, 1971), ***cognitive mapping*** (Anderson-Maudaus, 1990), ***semantic networking*** (Collins & Qullian, 1969; Johnson & Pearson, 1984; Lindsay & Norman, 1972), ***webbing, semantic webbing*** (Bonds, 1989; Bromley, 1991; Bromley, 1992; Brownson, 1988; Criscoe & Gee, 1984; Freedman & Reynolds, 1980; Hainer, Fagan, Bratt, Baker & Arnold, 1990; Kaufman, 1992; Marzano & Marzano, 1988) ***hierarchies***, and ***causal networks*** (Marzano & Marzano, 1988)[11], is a type of graphic organizer (Durkin, 1989).

Description

Semantic mapping, which has been shown to be effective with regular, LD, and LEP students (Pittelman, Heimlich, Berglund & French, 1991), is a learning strategy that may enhance the comprehension of LEP students in content area and ESOL classrooms (Heimlich & Pittelman, 1986; Peterson, 1990; Scanlon, Duran, Reyes & Gallego, 1992; Sinatra, Stahl-Gemake & Berg, 1984). Semantic mapping is a procedure which helps to activate and/or tap, and organize students' background knowledge (Englert & Mariage, 1991; Hoppes, 1989). Once their background knowledge is tapped, mapping helps motivate students to develop their schemata (Durkin, 1989; Short, 1991). Maps provide a visual display of schematic relationships among categories of information around a central concept (Criscoe & Gee, 1984; Freedman & Reynolds, 1980; Heimlich & Pittelman, 1986; Sinatra, Beaudry, Stahl-Gemake & Guastello, 1990). "Circles with the concepts written inside are connected by lines to show the associations and relationships among the concepts" (Peterson, 1990, p. 3). Take, for example, the superordinate concept of ***hair***. There are different types, colors, and lengths of hair (Gairns & Redman, 1986). Hair length can range from short to long; hair type can range from straight to curly; and hair color can range from very light to very dark. Thus, a map can show not only superordinate and subordinate concepts (Schwartz, 1985), but also ***scale*** or ***cline*** relationships (Gairns & Redman, 1986; Nation, 1990), or the ***semantic gradients*** (Blachowicz, 1986) among the subordinate concepts. Take, for example, the superordinate concept, ***vacation***. Subordinate concepts might include: ***How often?, Where to?, How long?***, and ***How many people?*** (see Figure 2-1[12]). The cline of ***How often?*** includes ***rarely,***

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[11] This is an excellent source distinguishing among three types of semantic maps--webs, hierarchies, and causal networks.

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[12] This ***vacation*** map is based on the ***hair*** map by Gairns & Redman (1986).

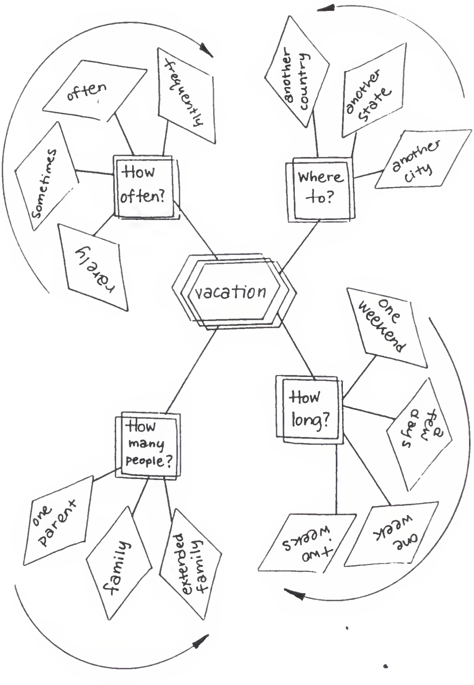

Figure 2-1. Semantic Map of Vacation.

sometimes, often, and ***frequently***. This map was drawn using a template custom designed for this experiment (see Appendix F). Although mapping and webbing are often used interchangeably, webbing usually refers to organizing ideas or a story grammar from a reading passage. Semantic webs, as described by Freedman and Reynolds (1980) are made up of four major parts: the ***core question, web strands, strand supports,*** and ***strand ties***. The ***core question***, chosen by the teacher, is the focus and purpose of the web. The core question may also be called, simply, the ***core*** (Bonds, 1989). ***Web strands*** are the answers to the core question. ***Strand supports*** are facts, inferences, and generalizations which provide further information about the web strands. Strand supports may also be called ***nodes*** (Just & Carpenter, 1987; Pearson & Johnson, 1978). ***Strand ties***, or ***links***, are the connections between the strands (Just & Carpenter, 1987; Pearson & Johnson, 1978). Designated links will vary from student to student depending on their prior knowledge and interpretation of the information. Maps can be designed with any variety of geometric shapes, such as circles, squares and rectangles, to encapsulate and graphically organize information into categories (Kameenui, Dixon & Carnine, 1987). Each map is a unique spatial arrangement which describes a core concept--its final product highly dependent on the schemata of the author(s) (See Figure 2-2).

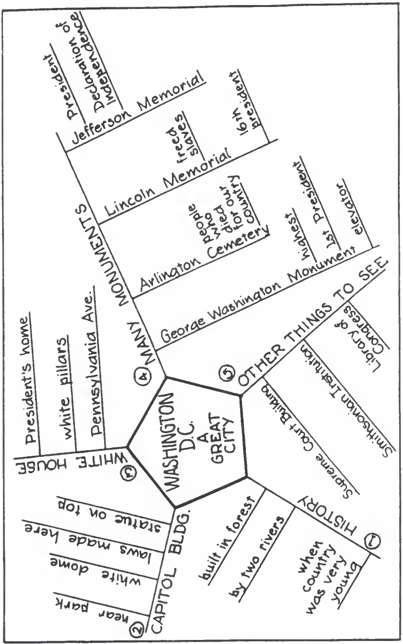

Figure 2-2. Semantic Map of Washington, DC.
Note. From Semantic mapping: Classroom Applications (p. 18) by J. E. Heimlich & S. D. Pittelman, 1986, Newark, DE: International Reading Association. Copyright 1990 by the International Reading Association. Reprinted by permission.

The author of this map created five subordinate categories--history, capitol building, white house, many monuments, and other things to see (Heimlich & Pittelman, 1986). This may have been composed based on a reading assignment, visual aids, other materials or discussion. Another student may have arranged the map, depending on his background knowledge, very differently. A student who lived in Washington, DC for ten years would probably have a significantly greater amount of background knowledge than a student who had only visited Washington, DC on vacation last summer. Both of them would probably have a greater amount of background knowledge than a student who had never been there, or ever heard much about it prior to the lesson.

Procedures

Graves and Prenn (1986) suggest that although SM does not require a lot of out-of-class preparation time, a detailed map of one concept may require up to thirty minutes of class time. Semantic mapping, which activates students' schemata, is designed to tap students' prior knowledge through discussion (Heimlich & Pittelman, 1986). During discussion, or during a reading activity, maps may be drawn freehand or with the aid of rulers and templates (see Appendix F). They may be drawn on a chalkboard, on poster-board, or on individual pieces of paper. Students may work alone, in pairs, small groups, or together as a class. Procedures for mapping are very flexible. Teachers can set guidelines to suit their needs and instructional aims. There's only one important rule to remember with mapping, and that is staying focused. Klein (1988) urges teachers to "keep students on track. One weakness of the semantic mapping technique is that class discussion can turn into a brainstorming session, with some students eager to take it in unprofitable directions" (p. 84). Teachers must be aware of this, and find solutions.

Applications

Semantic mapping can be used for general vocabulary development, as a means to activate student's prior knowledge, as a brainstorming activity, a prewriting activity, a prereading or postreading activity, or as a study skill strategy, (Antonacci, 1991; Brownson, 1988; Englert & Mariage, 1991[13]; Hainer, Fagan, Bratt, Baker & Arnold, 1990; Heimlich & Pittelman, 1986; Klein, 1988; Klein, Peterson & Simington, 1991; Nagy, 1988; Ward, 1988). It may also be used as a substitute for traditional note taking and outlining procedures (Daines, 1982; Hanf, 1971; King, Fagan, Bratt & Baer, 1987). Semantic maps are effective organizers for students before, during, and after reading, for writing activities, and for vocabulary study

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[13] This article describes a reciprocal teaching procedure called "POSSE" (p. 124), which stands for, Predict, Organize, Search/Summarize, and Evaluate. Reading predictions are made based on the student's background knowledge of the topic. Predictions are organized using semantic maps. Students use the maps to search, summarize and evaluate the text based on their predictions.

(Peterson, 1990). "As a vehicle for building writing skills, vocabulary, and reading comprehension, semantic mapping can show the way to learning in every subject area" (Kalgren, 1992, p. 18). Maldonodo-Colon (1991) recommend the use of mapping for second language learners to develop their cognitive and linguistic abilities; and Kaufman (1992) recommends using webbing to enhance the critical thinking and reading comprehension skills of LEP students. "A major strength of the semantic mapping strategy is that it helps students to construct a model for organizing and integrating information that can be applied to a wide variety of situations" (Al-Baili, 1988, p. 2). Nagy (1988) points out that the mapping "blurs" (p. 13) the distinction among the learning activities that it includes, and that this blurring may actually be a distinct advantage of the technique.

Reading. SM may be used to map the main ideas in a text (Wilf, 1988). "Studies consistently favor the mapping strategy over simpler more traditional study techniques, such as reading, rereading, and taking notes" (Pearson & Gallagher, 1983, p. 329). A map may be used to develop a ***story grammar***, or ***episodic map*** (Fradd, 1987; Schmelzer, 1990). A story grammar "allows the reader to see graphically the parts of a story [e.g., theme, setting, conflict, characters, and plot] and how they relate to one another" (Richard-Amato, 1990, p. 68).

Writing. Semantic mapping improves not only students' comprehension, but also their composition (Heimlich & Pittelman, 1986). Cronin, Sinatra and Meadows (1990) found remarkable results in their "Writing to Learn" (p. 18) program based on semantic mapping.

Vocabulary. Semantic mapping is "an excellent device for encouraging vocabulary development" (Johnson & Pearson, 1978, p. 37). Maps can be used to combine hands-on reading, writing, listening and speaking activities to help increase students' vocabulary. It can help to improve all five types of vocabulary described by Cushenbery (1985), which makes it a very effective strategy to use for with LEP students. To provide students with both ***contextual*** and ***definitional*** information about a word, teachers may begin a semantic mapping activity by allowing students to brainstorm related words, and for students who want to, use dictionaries or thesauri in the process (Stahl, 1986). To enhance the ***deep processing*** of a concept, teachers can encourage students to draw pictures as strands on their maps (Allen, 1983; Johnson, 1984; Johnson & Pearson, 1984; Pearson & Gallagher, 1983) and discuss their subordinate concepts.

Summary

Students rely on their prior knowledge to create maps that are logical to them (Antonacci, 1991). Because students create their own unique maps, they write what makes sense to them, exposing their prior knowledge and gaps in knowledge.

Semantic mapping provides a tool for teachers to use to help locate these gaps in students' conceptual frameworks (Antonacci, 1991). Teachers can then guide students to make the necessary connections to their prior knowledge leading them to understand a new concept. Nagy and Herman (1987) state that "instruction must aim at establishing rich ties between new words and prior knowledge and must present new words and concepts in the context of larger domains of knowledge" (p. 33), adding that this is a ***necessary*** condition for improving comprehension. The success of mapping depends largely on how much the teacher "values the process of thinking for students" (Freedman & Reynolds, 1980, p. 684). Mapping is done, not to reinforce the teacher's thinking, but to tap students' prior knowledge and integrate the new information with their existing schemata (Carrell, Pharis & Liberto, 1989).

Bromley (1991) describes the rationale for webbing. It promotes comprehension, enhances learning, links reading and writing, but most importantly, promotes enjoyment.
An activity which utilizes multiple skills may benefit a greater number of students in class by responding to various learning styles, diverse backgrounds, and different levels of language proficiency (Bromley, 1992). In addition, a map provides a graphic image for students to review later, allowing for repeated exposures to many words in a given schema.

Semantic Feature Analysis

Semantic Feature Analysis (Criscoe & Gee, 1984; Graves, 1987; Johnson & Pearson, 1984) is used interchangeably with, or closely related to, ***semantic feature matrices, collocational matrices*** (Summers, 1988), ***grids, collocational grids, vocabulary grids***, and ***componential analysis*** (Gairns & Redman, 1986; Nation, 1990). Although SFA is a "radical departure from traditional vocabulary instruction in content areas" (p. 610), Anders & Bos (1986) recommend it because it is based on sound theory and research (Anders & Bos, 1986; Pittelman, Heimlich, Berglund & French, 1991). SFA evolved from studies done in the 1960s and 1970s "when researchers were interested in children's acquisition of the various features of concept words, the kind of features acquired, and the order of the acquisition" (Klein, 1988, p. 85). Schema theory and the knowledge hypothesis provide a theoretical foundation for SFA in two ways (Anders & Bos, 1986). First, SFA helps students to build bridges among ideas and comprehend their relationships (Johnson & Pearson, 1984). Second, SFA helps to activate students' background knowledge through discussions which encourage students to relate personal experiences that are relevant to target words (Anders & Bos, 1986; Pittelman, Heimlich, Berglund & French, 1991). An important advantage of SFA is the "ease with which it allows students to activate prior knowledge and to think about the relationships between and among their prior knowledge and the new superordinate and subordinate concepts" (Anders & Bos, 1986, p. 615). SFA "capitalizes on the way information is stored by category in memory" (Pittelman, Heimlich, Berglund & French, 1991, p. 1). A 1983 study by Toms-Bronowski comparing the effectiveness of SM, SFA and contextual analysis on vocabulary learning found that SFA was the most effective of the three (Pittelman, Heimlich, Berglund & French).

Description

The SFA matrix is an instructional tool which helps students to participate in discussions with specific, guided purposes. Students then comprehend more and become more interested in the activity and its content. SFA can easily be used by all teachers. Evidence shows that it is effective with students of different reading abilities and ethnic backgrounds from preschool through graduate school (Pearson & Johnson, 1978; Pittelman, Heimlich, Berglund & French, 1991). SFA has also been shown to be effective with learning disabled (LD) students (Anders & Bos, 1986).

Gairns (1986) describes ***componential analysis*** (i.e., SFA) as a

> systematic means of examining sense relations. If we take items from the same semantic field (and which therefore have some features in common with each other) we can, by breaking them down into their constituent parts, examine the similarities and differences between them.
> e.g. boy = +human +male +child
> girl = +human -male +child (p. 40)

A completed grid reveals which features distinguish one item from another. It provides details as to how words are alike and different. Rivers (1981) states that students must learn to discriminate among variations and boundaries in distribution of meanings of comparable words.

Symbols. Matrix cells are marked with symbols indicating relationships among corresponding concepts. The most common symbols used are, a plus (+) to indicate that a particular term has a particular feature, and a minus (-) to indicate that a term does not have that particular feature (Anders & Bos, 1986; Johnson & Pearson, 1984; Pittelman, Heimlich, Berglund & French, 1991) (see Figure 2-3). In addition to using plus and minus symbols, younger students may use smiling faces for ***yes***, and frowning faces for ***no*** (Johnson & Pearson, 1984; Pittelman, Heimlich, Berglund & French, 1991). Another common set of symbols is: always (A) (i.e., this word nearly always has this feature), sometimes (S), and never (N) (Pittelman, Heimlich, Berglund & French, 1991). Students may also use a numerical system (0 = none, 1 = some, 2 = much, 3 = all) (Johnson & Pearson, 1978; Stieglitz & Stieglitz, 1981), or a modified Likert scale where five (5) represents a very positive relationship, four (4) positive, three (3) ambivalent, two (2) negative, one (1) very negative, and zero (0) or a question mark (?) for an unknown relationship (Anders & Bos, 1986).

Procedures

One SFA chart on a chalkboard or overhead projector may serve as a focal point for the whole class (Pittelman, Heimlich, Berglund & French, 1991). Students may have photocopies of incomplete charts created by the teacher or students, or students may create their own charts. They can do so by folding blank paper both horizontally and vertically to form a grid, or by folding lined paper vertically to form columns of the grid. Teachers may also provide students with photocopies of a blank grid. When students work independently, their charts may be similar, but no two will be identical (Anders & Bos, 1986). This is desirable. It shows evidence that students are relying on their own background knowledge which varies tremendously from student to student.

Anders and Bos (1986) suggest that the teacher plans all of the terms to be used in the chart[14]. Their procedure requires a great deal of out-of-class preparation time on the part of the teacher. The complex integration procedure that they suggest, however, is not necessary for more simple

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[14] For elaborate guidelines on how to create an SFA matrix, see Anders and Bos (1986). They provide advice as to which words and phrases should be selected, and how they should then be divided into superordinate and subordinate concepts.

SFA activities. Graves (1987) describes a process whereby teachers present students

> with a grid containing a set of related words on one axis and a set of attributes on the other axis. In their initial work with such a grid, students are shown a completed grid. Next, they are asked to fill in a grid, indicating those attributes that belong to each word. Later, they are asked to add to both the list of related words and the list of attributes; and later yet, they can be asked to create grids. (p. 171)

The same method may be used requiring no preparation time on the part of the teacher. Criscoe and Gee (1984) suggest that the teacher identify a major concept for a matrix, and then elicit words from students that relate to that category. These words are listed vertically. Then students provide features of those words, and these are listed horizontally. Finally students fill in each cell of the matrix with appropriate symbols[15].

Despite the form of the grid, it is essential that students "add their personal experiences or understandings of the terms" (Anders & Bos, 1986, p. 614) through discussion. "Discussion is critical to the success of the SFA strategy" (Anders & Bos, 1986, p. 614). Through discussion students confirm, modify, and sometimes drastically change their knowledge and understanding of known, and partially known, concepts. Through discussion, students relate new information to what they already know to learn new concepts (Pittelman, Heimlich, Berglund & French, 1991). "Students question one another and defend their answers" (Pittelman, Heimlich, Berglund & French, 1991, p. 15) by referring to a variety of resources. Only if their prior knowledge is tapped can comprehension and learning take place.

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[15] See Pittelman, Heimlich, Berglund and French (1991) for a detailed seven step process describing how to use SFA.

Applications

SFA is a viable strategy for teaching content area vocabulary and concepts needed for reading comprehension (Anders & Bos, 1986). Anders and Bos (1986) report that students who participated in an SFA study, "learned significantly more content area vocabulary words and had significantly better reading comprehension" (p. 612) than those who participated in a control group. A 6 month follow-up study revealed that students who participated in the SFA group "maintained their earlier advantage over the control group with no significant loss of information between the initial and followup [sic] tests" (Anders & Bos, 1986, p. 612). SFA can be used before, during and after reading. "It encourages students to predict relationships, read for confirmation, and integrate new and old learning" (Anders & Bos, 1986, p. 611). In addition, SFA can be used with a computer database of words (Pittelman, Heimlich, Berglund & French, 1991)[16].

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[16] See Pittelman, Heimlich, Berglund and French (1991) for suggestions on how to implement a computer database of words using SFA.

Collocation. Collocational grids, as described by Gairns (1986), show pairs of words that may be used together. She provides a sample matrix with adjectives written in the first column vertically, and nouns written in the first row horizontally. Adjectives listed are ***beautiful, lovely, pretty, charming, attractive, good-looking***, and ***handsome***. Nouns listed are ***woman, man, child, dog, bird, flower, weather, landscape, view, day***, and so on. The purpose of the chart is to decide which adjectives can be used to describe which nouns. Can one say (or write), ***beautiful woman, pretty dog, attractive weather, charming bird, good-looking view***? For each corresponding grid cell, a plus sign (+) is used to indicate that the words do collocate, and a blank cell indicates that they do not. Gairns adds that although there are no 'rules' of collocation, it can be a useful activity for intermediate second language learners who persistently use adjectives inaccurately.

Vocabulary. SFA can be used to analyze both the form and meanings of words. Using an SFA matrix, students can practice combining prefixes and suffixes with roots.

> Roots and prefixes are laid out in a grid form, with prefixes running vertically and roots running horizontally. Students mark the places within the grid where the prefixes and roots can be combined to form words and the write then words out (Dale, 1986, p. 164).

In a sample affixing matrix, Dale uses the prefixes, ***tri-, pro-, ex-***, and ***re-***, and the roots, ***duc(t)*** (lead), ***tract*** (draw), ***cycle*** (wheel), ***pel*** (push), and ***claim*** (call). Students mark the boxes for the prefixes and roots that can be combined. Notice that ***re-*** and ***duc(t)*** combine to form the word ***reduce***, and ***re-*** and ***cycle*** combine to form the word ***recycle***. Dale suggests using this as a vocabulary testing method. Students are to complete the chart as much as possible before consulting a dictionary. Then they can use the dictionary to add to their list the words they didn't know or didn't remember. The student might also use a dictionary to check the spelling of the words.

SFA is particularly useful in comparing and contrasting attributes among several related words, and in helping students to understand the nature of synonyms (Anders & Bos, 1986). "Learning about synonyms is one of the most important ways of improving your vocabulary" (Tyler, 1986, p. 62). If done appropriately, an SFA matrix shows that no two words are truly identical in their connotations and/or denotations (Johnson & Pearson, 1984). Gairns (1986) warns, however, that such "clinical, accurate analysis" (p. 41) may be misleading. In some cases, there may be disagreement when discussing features about words. Although this type of study is appropriate for advanced learners, Gairns does not recommend using it with lower levels. The scope and complexity is too difficult for them.

SFA can be used by teachers as a vocabulary strategy (Anders & Bos, 1986; Klein, Peterson & Simington, 1991), and may be particularly useful to content area teachers. Subject area vocabulary reinforcement (SAVOR) is a procedure developed by Stieglitz and Stieglitz (1981) which uses SFA to reinforce vocabulary in the content areas (See Figure 2-3). SAVOR is primarily a vocabulary review technique, to be done as a unit review, for example.

Table 2-1
Semantic Feature Analysis Matrix for Content Area Math

	SHAPES				
	Four sided	Curved or rounded lines	Line segment	All sides equal in length	Right angles
Triangle	-	-	+	+	+
Rectangle	+	-	+	-	+
Parallelogram	+	-	+	+	+
Circle	-	+	-	-	-
Trapezoid	+	-	+	-	-
Semicircle	-	+	+	-	-
Square	+	-	+	+	+

Pearson & Johnson (1978) discuss four important relations among words: **class**, **example**, **attribute**, and ***related concepts***. ***A class*** relation is one that describes a member of a class. A dog is an animal, for example. An ***example*** relation is one that provides a concept and an individual example of that concept. Fido is one example of a dog. ***Property*** relations are those which describe properties or attributes of a concept. Dogs have hair, so hair is an attribute of a dog. ***Related concepts*** are those in which more than one connection needs to be described. The comparison between dog and cat would be different from a comparison between a dog and wolf. Although all three are animals, only two, most likely, would be considered pets. Using a variety of class, example and property relations in SFA matrices helps to clarify the differences among targeted words.

Stahl (1986) suggests providing students with both ***contextual*** and ***definitional*** information, teachers may begin an SFA activity by allowing students to brainstorm related words, and for students who want to, use dictionaries or thesauri in the process. To enhance the ***deep processing*** of a concept, teachers can create, or encourage students to make analogical ties between familiar domains and unfamiliar domains (Criscoe & Gee, 1984; Pearson & Gallagher, 1983; Pearson & Johnson, 1978). SFA activities may lead students to discussions using analogies. A paper clip is like a staple, but the paper clip puts creases in your paper, while a staple put holes in your paper. A lime is like a lemon, but a lime is green and a lemon is yellow. Drawing analogical ties helps to activate and build upon students' background knowledge (Hayes & Tierney, 1982).

Summary

SFA is an effective vocabulary instructional tool, especially for learning word synonyms. In addition, it has a variety of other applications which may be useful to ESOL and content area teachers.

Summary

Vocabulary development is an essential part of the education of all students, but particularly important for LEP students. Although SM and SFA are effective vocabulary development strategies, there is not one best way to teach all words. Each method has its costs and benefits (Graves & Prenn, 1986). The teacher must decide which method is most appropriate for each circumstance.

CHAPTER 3
METHODOLOGY

Hypotheses

For the first two hypotheses, the independent variables were the use of SM and SFA instructional strategies for vocabulary development. The first hypothesis tested the treatment effect on knowledge of targeted words. The dependent variable was the students' posttest mean scores on the vocabulary subtest of the SAT. The second hypothesis tested the treatment effect on reading ability. The dependent variable was students' posttest mean scores on the reading subtest of the SAT. The third hypothesis tested whether teachers could accurately predict their students' prior knowledge of vocabulary words by using SM or SFA. Prior to presenting the target words to students, teachers were asked to predict students' performance on the pretest (see Appendix B). The students' vocabulary pretest was the vocabulary subtest of the SAT. Teachers predictions were compared to students' pretest scores. During the last week of the study, teachers were administered the same prediction survey (see Appendix J) and asked to judge students' performance on the posttests (i.e., the vocabulary subtest of the SAT). Teachers predictions were compared to students' posttest scores.

Procedures

A pilot study was conducted prior to the actual data collection. The main purpose of the pilot study was to examine the central premise of the study, the accuracy of the procedure, and teachers' and students' ability to follow the training procedures. Results of the pilot study were favorable. Modifications were made prior to data collection for the study presented in this dissertation.

Permission to conduct the study was obtained from the University of Florida Institutional Review Board and the School Board of Broward County. As a district, Broward County has the third largest population of LEP students in Florida, after Dade and Palm Beach Counties. Dade County serves about 51% of the LEP student population, Palm Beach about 11% and Broward, about 8%. In the 1992-93 school year, over 111,000[17] LEP students, from about 175 different countries of national origin, were reported as being served by Florida public schools in grades kindergarten through 12. Dade County served approximately 57,000 of those students, Palm Beach, almost 12,000, and Broward, almost 9,400 (Florida Department of Education, 1993).

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[17] This figure reflects student membership taken on one school day in October, 1992. For this reason, it may be an underestimate of the total LEP student population in Florida.

Broward County Multicultural Education Department is known for its innovative ESOL programs and its track record in being awarded Title VII Office of Bilingual Education and Minority Language Affairs (OBEMLA) grants. This study required students to be in ESOL programs where English was the primary language of instruction. When the director was first contacted about the idea of the study, she was eager to have her district be used as the site.

Principals of the ESOL center middle schools were informed, by phone and in writing, of the purpose of the study. Principals were asked to provide the names of teachers who would be teaching ESOL classes during summer school. Teachers were contacted by phone and invited to participate in the study. A staff member of Broward County Public Schools facilitated the researcher in making the calls. Teachers were given a brief outline of the study to take place during summer school. They were told that they would be provided materials and information about a vocabulary learning strategy, and that their mileage to forty-five minute weekly meetings would be reimbursed. Of approximately 20 candidates, 14 teachers agreed to participate. Most of those who declined did so due to personal time commitments with their children or their own summer school classes that they were taking at a university.

Pilot Study

A 5-week pilot study was conducted in Putnam County, Florida, from April through May 1993. Two social studies content area teachers, one ESOL pull-out teacher, and one teacher's aide (TA) participated. Seven students used SM and SFA to learn targeted words selected by teachers. Five students served as the control group. Students in the control group did not receive any instruction in SM or SFA, nor any particular emphasis of the key words beyond normal instruction. Results showed that students in the treatment group outperformed students in the control group on their knowledge of key words presented in class. The instrument was prepared by the experimenter, and in no way claims to be reliable or valid. Minor changes were made to the format and layout of the study as a result of teachers' input and researcher observations during the pilot study.

Data Collection

During the first workshop in Broward County with both groups (i.e., SM and SFA) of teachers present, teachers were given a brief outline of the purpose of the study and provided time to ask any questions not answered in the introduction. Teachers then completed a teacher profile. This demographic data collection instrument consisted of self-report information by the teacher on the following: native language, bilingualism, number of years of teaching experience, highest level of education, gender, certification subject areas, ESOL training, date of birth, race, and country of national origin (see Appendix A). After teachers completed the teacher profile, the experimenter then administered the teacher prediction survey pretest, asking teachers to predict which words their LEP students would know on the pretest (see Appendix B).

At the end of the first workshop, teachers were provided with the following: parental informed consent letters (see Appendix C), student assent scripts (see Appendix D), and student educational background surveys. This demographic data collection instrument (student educational background survey) consisted of self-report information by the student on the following: gender, age, lunch program participation, total number of school years completed in the USA, country of national origin, and ability to read in home language. (see Appendix E). In addition, teachers received SAT reading vocabulary and comprehension subtests, SAT answer sheets, and directions for administering the SAT (Psychological Corporation, 1989), as provided by the test publisher, Harcourt Brace Jovanovich.

Teachers asked students to have their parents sign the parental informed consent letter explaining the purpose of the study, as required by the University of Florida Institutional Review Board (UFIRB). In a few cases where parents did not return the parental informed consent letter within the first week of the study, teachers phoned the parents, explained the purpose of the letter and the study, and received parental permission by phone. No parents declined having their children participate in the study. Students were asked to sign a student assent script, also required by UFIRB. According to the directions for administering the SAT, teachers administered the vocabulary and reading subtests of the SAT to students as a pretest. Pretests were given before introducing the strategy to the students. The experimenter scored all pretests by hand, and double-checked them one week later.

Each of the treatment groups met (separately) for 45 minutes one time per week for 7 weeks. Teachers were asked to collect at least two samples from each of the subjects by the end of the study. Based on workshop discussions and classroom observations, teachers required students to write their own maps or SFA grids less than half of the time. This may be partially due to the fact that they only had about eight minutes per word. The forty targeted words were selected from the SAT Intermediate 3 Form J, vocabulary subtest. Words were selected randomly from each of the three subsections of the test (synonyms, vocabulary in context and multiple meanings), so that each week students had words from each subsection.

During the last week of the study, teachers administered the same vocabulary and reading comprehension subtests of the SAT to students as a posttest. Teachers were instructed to complete all of the target words using their assigned strategy before administering the posttest. At the last meeting, teachers were asked to take the teacher prediction survey posttest (see Appendix J). The experimenter scored all posttests by hand, and double-checked them one week later.

Teachers

Thirteen teachers and one teacher's aide (TA) participated in the study, 7 teachers and the TA in the SM group, and 6 teachers in the SFA group. Ten teachers, and the TA, were females, and 3 were males. One teacher was multilingual, 10 (including the TA) were bilingual and 3 were monolingual. English was the first language for 7 teachers, Spanish for 4 teachers (including the TA), Creole and French for 2 teachers and Italian for 1 teacher. One teacher held a specialist's degree, 4 held master's degrees, 8 held bachelor's, and the TA held the equivalent of an associate's degree. Six teachers were white, 4 black, and 4 Hispanic (including the TA). Seven teachers were born in the United States, 2 in Haiti, 2 in Puerto Rico, 1 in Cuba, 1 in Italy, and 1 in Venezuela (including the TA). Their number of years of teaching experience ranged from 1-41 years. The average number of years of teaching experience for the SM group was 6.6, and for the SFA group was 9.0. The average age of teachers in the SM group was 43.6[18] years. Their ages ranged from 25 to 63. The average age of teachers in the SFA group was 31.8 years. Their ages ranged from 24 to 41.

Subjects

Middle school LEP subjects were chosen as the target group for this study for two reasons: their academic skills level, and their need for strategies to improve their language proficiency, especially in the content areas. In Florida, kindergarten through twelfth grade students, identified and assessed as being LEP fall below the 32nd percentile on state-approved listening and speaking instruments, indicating their need for English language development. Seventh grade students are young enough to make strides toward English language proficiency before graduating from high school, and are cognitively prepared to learn and apply strategies presented in this study on their own. These strategies could prove to be useful to them in their content-area classes, where they are faced with numerous new words each day.

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[18] One teacher chose not to report her age.

Subjects were seventh grade[19] Spanish-speaking LEP students in a summer school program. Subjects were students within ESOL classrooms consisting of approximately 20-25 LEP students of various language and cultural backgrounds. The Hispanic students in this study were a heterogeneous population. They came from 17 different countries of national origin. See Table 3-1 for a breakdown of country of national origin of students by treatment.

Table 3-1
Country of National Origin of Students by Treatment

Country	SM	SFA
Bolivia	1	0
Colombia	6	6
Costa Rica	1	0
Cuba	0	1
Dominican Republic	3	0
El Salvador	0	2
Guatemala	1	1
Honduras	3	2
Mexico	2	1
Nicaragua	1	0
Panama	0	1
Peru	2	4
Puerto Rico	6	3
San Salvador	0	1
Uruguay	1	0
United States	0	1
Venezuela	3	3
TOTAL	30	26

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[19] Students were entering eighth grade in the fall.

Of the 56 students, 44 were in the free lunch program, 3 were in the reduced lunch program, and 9 were not in either. The SM group consisted of 14 males and 16 females. The SFA group consisted of 17 males and 9 females. Students' number of school years in the USA ranged from 0 to 7. The average number of school years in the USA for students in the SM group was 2.3 years. The average number of school years in the USA for students in the SFA group was 2.2. All students indicated that they were able to read in their home language. Their English proficiency varied from beginner to intermediate, but all still qualified, according to state guidelines, to remain in the ESOL program.

Treatments

In the pilot study, teachers pointed out that they didn't have the time to read lengthy books or articles about instructional methods. They preferred practical samples of students' work. So, teachers in this study received only samples of semantic maps and SFA grids. Teachers were asked to stay within the guidelines of no more than 8 minutes per word. They were asked to conduct two 30-minute lessons 2 times per week. Each lesson was to introduce 4 new target words, and allow a few minutes for multiple exposures to previous target words. During the first few weeks of the study, teachers were to provide guidance to students as to how to use the strategy, but by the last week of the study, students were to be able to apply the strategy to the target words independently. Both treatments focused mainly on semantics, rather than the form (e.g., suffixing, pronunciation) of the targeted words (Elley, 1991). However, it is likely that some form may have been discussed. Explanation on classroom implementation was done during the workshops.

Treatment A: Semantic Mapping

Teachers reviewed sample maps from the following sources: (Black, 1990; Curtain & Pesola, 1988; Daines, 1982; Freedman & Reynolds, 1980; Ghaye, 1989; Heimlich & Pittelman, 1986; Johnson, 1984; Johnson & Pearson, 1984; Levin, Johnson, Pittelman, Levin, Shriberg, Toms-Bronowski & Hayes, 1984; Nagy, 1988; Pearson & Johnson, 1978; Sinatra, Beaudry, Stahl-Gemake & Guastello, 1990). In addition, teachers received a template custom designed for this experiment (see Appendix F). One template was provided to each teacher. None of the student samples provided by teachers showed evidence of using the templates. This was probably due to the fact that each teacher received only one template. The use of templates was not stressed for two reasons. First, with the time constraint of only 8 minutes per word, students could get sidetracked by the appearance of their maps. Second, because students who participated in this group were scattered among 7 different teachers and classes, the cost factor for providing templates to not only the students in the study, but to all students in all of the 7 classes was not cost effective given the purpose of this study.

Teachers told students that they were going to learn a strategy, called semantic mapping, that would help them to learn vocabulary. Teachers were provided with the following guidelines to ensure that there would be instructional consistency among the SM groups.

1. IDENTIFY TARGET WORD(S): Teacher introduces one, two, three or all four target words. Teacher states the purposes for learning the new words (Freedman & Reynolds, 1980), and provides motivation for students to learn them. For example, the teacher might explain to students that they will increase their vocabulary, improve their scores on tests, or understand more English. Words targeted for this study were taken from multiple choice question stems from the vocabulary subtest of the SAT.

2. ACTIVATE & TAP STUDENTS' PRIOR KNOWLEDGE: Teacher elicits, from students, words (i.e., synonyms, antonyms) that are possibly related to the target words (Freedman & Reynolds, 1980). "The teacher encourages all students to contribute and accepts each contribution, appropriate or not, for discussion and evaluation (Freedman & Reynolds, 1990, p. 684). The teacher begins a semantic map on the chalkboard of students' suggested words. "By consensus

students accept, combine, or reject the responses" (Freedman & Reynolds, 1980, p. 680). The teacher and students, together, analyze their responses and decide what will be added to the web (Antonacci, 1991; Freedman & Reynolds, 1980). Together they begin to connect concepts. "Teachers should be careful not to produce a confusing mass of lines and labels" (Freedman & Reynolds, 1980, p. 681). "The dialogue between teacher and students is clearly viewed as a critical component of the semantic mapping strategy, as is the sharing of category instances among students" (Levin, Johnson, Pittelman, Levin, Shriberg, Toms-Bronowski & Hayes, 1984, p. 13). Students brainstorm ideas and words (Brady, 1990). Student responses are recorded in the form of an SM. This may be done at the chalkboard, in small groups, or individually. Both teachers and students should feel free to erase and rewrite a strand or support if additional information is provided which changes the hierarchical relationships between the concepts.

3. CLASSIFY USING SM: Student makes a personally meaningful map integrating prior knowledge with new information. Students are encouraged to discuss their maps with their peers (Levin, Johnson, Pittelman, Levin, Shriberg, Toms-Bronowski & Hayes, 1984). The teacher circulates among students to observe what students develop through mapping and what relationships they make among the strands. This can help teachers to understand individual

student’s "capabilities to construct categories and relationships" (Freedman & Reynolds, 1980, p. 683) as students relate the concepts to their individual experiences and diverse backgrounds.

4. PROVIDE MULTIPLE EXPOSURES: Key words are repeated through discussion at least twice a week. Teachers are encouraged to provide a reward system to encourage multiple exposures to the target words in a variety of contexts. Students are encouraged to reuse the target words in later semantic maps, in class discussion, and in writing assignments.

Treatment B: Semantic Feature Analysis

Teachers reviewed sample SFA charts from the following sources: (Irvin, 1990; Johnson & Pearson, 1984; Nagy, 1988; Pittelman, Heimlich, Berglund & French, 1991). In addition, teachers in the SFA group received a staff guide for chalk used by music teachers to draw staff lines. This tool is very handy in drawing an SFA chart on the chalkboard. The experimenter instructed teachers to put chalk in only three of the five chalk holders, the end chalk holders, and the one in the middle. This allows for more distance between the lines of the outline of the SFA charts. This allows more space for writing more words or words large enough for all students in the classroom to see.

Teachers told students that they were going to learn a strategy, called semantic feature analysis, that would help them to learn vocabulary. Teachers were provided with the following guidelines to ensure that there would be instructional consistency among the SFA groups.

1. IDENTIFY TARGET WORD(S): Teacher introduces one, two, three or all four target words. Teacher states the purposes for learning the new words (Freedman & Reynolds, 1980), and provides motivation for students. For example, the teacher might explain to students that they will increase their vocabulary, improve their scores on tests, or understand more English. Words targeted for this study were taken from multiple choice question stems from the vocabulary subtest of the SAT.

2. ACTIVATE & TAP STUDENTS' PRIOR KNOWLEDGE: Teacher elicits, from students, words (i.e., synonyms, antonyms) that are possibly related to the target words (Freedman & Reynolds, 1980), and important features of the words. After drawing outlines for the grids with a chalk guide for music teachers, the teacher begins an SFA grid using the students' suggested words. "By consensus students accept, combine, or reject the responses" (Freedman & Reynolds, 1980, p. 680).

3. CLASSIFY USING SFA: Student makes a personally meaningful SFA grid integrating prior knowledge with new information. Students are encouraged to draw analogies (deep processing) using target words while making their charts.

The teacher circulates among students to observe how students compare the designated words. This can help teachers to understand individual student's knowledge of the words.

4. MULTIPLE EXPOSURES: Key words are repeated through conversation or reading at least twice a week. Teachers are encouraged to provide a reward system to encourage multiple exposures to the target words in a variety of contexts. Students are encouraged to reuse the target words in later classroom discussions or SFA grids.

Classroom Observations

Each week, for four weeks, during the second through fifth weeks of the study, the experimenter conducted one classroom observation of a teacher in each of the treatment groups. Teachers volunteered to be observed on a day of their choice. The experimenter conducted a total of 9 classroom observations, 5 for the SM group (including the TA), and 4 for the SFA group. Both teachers and students were observed using SM and SFA. In most cases, the experimenter did not participate in the activity, but took careful notes about what was happening in the classroom, how the teacher handled the strategy and guided the students, and how students were reacting. For teachers who had students do group activities, the experimenter walked around to different groups, observed students and guided students in elaborating on the target words. During some of the observations, students were interviewed to discuss their reactions to the instructional strategy. In comparing classroom observations during the beginning of the study and near the end of the study, in general, teachers were correctly giving more responsibility to students to apply the strategy to the target words. The researcher did not take notes or keep formal records of students comments about the strategies. The researcher preferred, rather, to talk to students informally during group work, or individual work. Informal observations revealed that, in general, students were benefiting from, and did enjoy using the strategies. In both groups, teachers creatively applied their assigned strategy using their own teaching style.

Semantic Mapping Group

In the SM group, the experimenter observed 5 (including the TA) of the 8 teachers using SM in the classroom with students. Several teachers began their lessons by introducing one or all four new words. Sometimes teachers would call on students immediately to come to the board to write down the ideas of other students. Other teachers would begin the framework of a map with several strands and strand supports, and then call on a student to volunteer to elaborate on the map. In some cases the teacher completed the entire map without calling on students to come to the board. Most of the teachers in the SM group allowed the students to provide the majority of input on the outcome of the map. For more difficult or abstract words, teachers provided more guidance and information.

Observation 1

One teacher, with very little teaching experience, allowed the students to map the target words. Providing only minimal coaching from the side of the room, she leaned on a stool, like a stage director, away from the chalkboard, near the students' desks. Students' desks were scattered rather randomly facing the front chalkboard with only one distinguishable wide row in the center of the class. The eight target words for the week were written in the upper right hand corner of the write/wipe board. The teacher kept the target words of that week in a 'Do not erase' box. When she asked for a volunteer to go to the board, many students quickly and eagerly raised their hands. Although seated students laughed at the student at the board for making spelling errors, and at each other for making semantic errors, most students were very eager and excited about providing input. Only a few were not offering input, but were paying attention nonetheless. It may be that these were some of the lower proficiency students.

When the student at the board made an error, in many cases, seated students corrected him or her. This, however, slowed the process somewhat because many students were offering the correct spelling at the same time, which made it difficult for the student at the board to hear the correct spelling. In cases where students did not know the spelling, the teacher helped. One of the four students who went to the board during this classroom observation session, looked at the teacher for correction each time he made a spelling error[20]. This process did, however, allow more time for other students to think of additional concepts to add to the map. For them, making errors seemed to be accepted as a normal part of the learning process.

All of the students were actively involved. At times when students became quiet, and stopped offering responses, the teacher would ask a few guiding questions until they came up with some more relevant concepts. In many cases, when students provided supports for strands that were already on the map, the teacher would advise the student at the board to link the support to the already existing strand. For example, for the target word *invigorated* a student offered the word *movies*. *Entertainment* was already a strand, so the teacher advised the student at the board to link *movies* as a support to *entertainment*. Even though the teacher did not require them to do so, many students copied the maps into their notebooks or onto a sheet of paper. One boy sitting near a wall with bookshelves got up, without asking, took a dictionary from the shelf and began using it as a reference for the remainder of the class. Then a boy sitting next to him did the same. When they provided input to the person making the map on the board, others could see that they were using the dictionaries. At one point, when the class could not think of anything else to add to the map, one of the boys read a short definition from the dictionary. The teacher responded, "you're reading from the dictionary, that's not fair," but she did not ask him to stop using the dictionary, and he continued to use it. One girl sitting on the other side of the class was using a Spanish/English dictionary that appeared to be her own.

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[20] Two solutions to alleviate the slowdown due to spelling might be to (1) have students do more practice in correcting each others' spelling errors, including practice in letter pronunciation and (2) complete the map before editing spelling errors.

After spending 5 to 10 minutes on each word, the teacher would summarize the meaning of the target word and the surrounding concepts represented on the map, asking students a few comprehension questions. "On the night before your first day of a new school year, do you feel invigorated?" Some students say, "yes," others say, "no." She continues, "when you're invigorated, how do you feel?" "Excited, happy, energetic," they respond.

Each student who went to the board had a unique style in mapping. Some used circles and others used boxes to contain the concepts. Some used lines and others used arrows to show directional links between the concepts. Although this class may have appeared to be somewhat chaotic to someone peering through the classroom door window, this young teacher did an outstanding job of modelling the strategy.

Observation 2

One classroom observation took place in a large classroom partitioned into two smaller classrooms, creating a cacophonous ambience. After my arrival, the teacher notified the teacher of the adjoining class that I had arrived, and could she please take her class elsewhere for the remainder of the period. Several minutes of book-slamming, shuffling, laughter and clattering persisted on the opposite side of the partition. When the hubbub of the other class ceased, and the teacher got the attention of her class, she began her lesson. "How do you learn vocabulary?" Students responded, and the teacher wrote on the chalkboard:

-look up in dictionary -definition -many meanings
-use word in a sentence
-repeat the word out loud

"The teacher added, "you can do all these things, plus semantic mapping."

-do all this, plus mapping

She went on to write one of the target words in the center of the chalkboard. "You can use lines, squares, circles, hearts, whatever you want, it doesn't matter. What do you want me to draw?" Students elicited responses, and the teacher decided to draw a heart around the word ***requirement***.

She asked students what requirements or responsibilities that they had. One student responded, "I have to wash the dishes." The teacher responded by saying that we have things that our mom or dad require of us. She drew a strand for ***mom*** and one for ***dad***, and then asked the class what other things their moms or dads required of them. Students were attentive and appeared to be enjoying the activity. They continued until the map was complete. Upon completion of the map, the teacher asked the students to repeat the target word after her, "requirement," she said. "Requirement," they responded. "Requirement," she said. "Requirement," they responded. "Requirement." "Requirement." Following this repetition drill, the teacher erased the small portable chalk board and began a second target word, this time with a rectangle. She used the same procedure to make the map, eliciting responses from students, and doing all of the recording at the chalkboard herself. At one point, she asked a student to look a word up in a dictionary. While waiting for the student to find the word, the class got somewhat sidetracked, as the teacher did not keep their attention focused on further development of the map.

For a few minutes while students were working on individual maps, the experimenter talked to a few students. Overall, students had positive comments regarding the method. One girl said that she liked it because she liked "drawing."

Observation 3

In another group, one of the more experienced teachers, had traditional ideas about discipline and a teacher-centered classroom. Desks were lined up in straight rows all facing the teacher's desk and chalkboard in the front of the room. The room was overcrowded with students and many wagged their heads back and forth trying to see the chalkboard. In this group, the teacher had prepared, before coming to class, a map including strands and the strand supports for each word, and students were to take notes. The teachers' prior knowledge was the pivot, and controlled the form and generation of the maps. Target words from the past two weeks were listed on the board. The teacher copied one strand or support at a time referring each time to her notes, giving explanation for each item. The strands and supports were elaborate, and in many cases beyond the ability of students to understand. The teacher took responsibility for shaping both the discussion and the form of the maps. Many students appeared to struggle to understand, but upon failure to understand resorted to doodling. Students were told that there would be a test, and that they needed the information. Although the maps were accurate and rather elaborate, they did not appear to be tapping the students' prior knowledge as well as those in other groups where students directed the outcome of the maps. About half of the students appeared to be trying to copy what they could read from the board. When the teacher elicited response, a few of the same students would raise their hands, but she would often first call on one who wasn't paying attention, give a few disciplinary remarks, and then call on a student with his or her hand raised. She reminded students that she would call on all students, not just those with their hands raised. When the student provided a possible strand idea, the teacher would provide praise, saying, "that's right," and "very good," but often would not add this information to the map.

In addition to the semantic maps, this teacher also drew mini-maps showing grammatical functions of some of the target words. The core of the map was the target word. The two strands were ***noun*** and ***verb***. The strand supports were short dictionary definitions of the word used as a noun or verb. After presenting seven such target words, she asked them to use each one as a verb in a sentence. Although the classroom procedures used by this teacher during this particular observation did not involve much student participation, student maps collected from this group were appropriate and appeared to have incorporated students' input.

Observation 4

In another class, the teacher already had students well into the first map when I arrived. Students were broken into small groups of about four or five, with their desks gathered together for cooperative learning. Their attention was focused on the map on the chalkboard that the teacher was making based primarily on their input (see Figure 3-1). Their input was coming from their individual maps which they completed through prior small group discussion (see Figures 3-2 and 3-3[21]).

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[21] Figures 3-2 and 3-3 show how different students' maps evolve based on the groups' background knowledge. Figure 3-3 shows how students can easily lose focus of the core idea through SM.

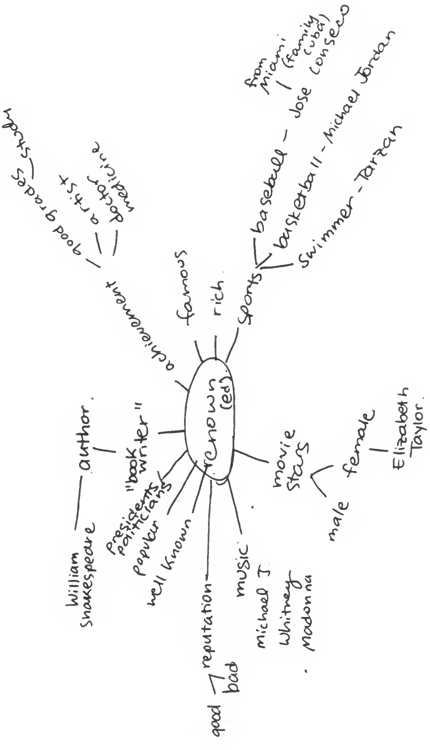

Figure 3-1. Class Map based on Student Input.

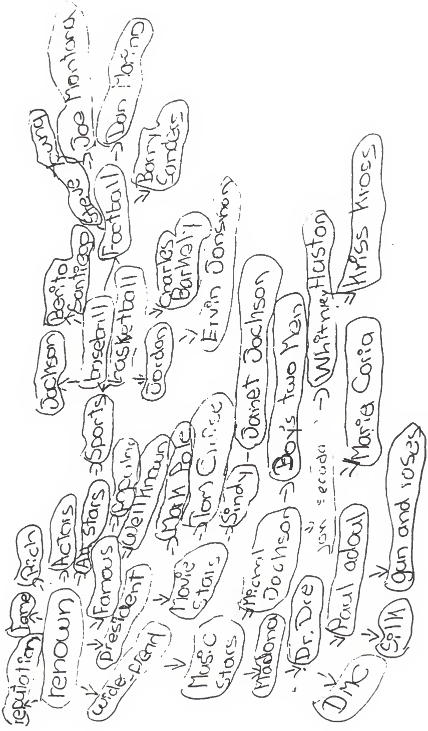

Figure 3-2. Small Group Map based on Student Input.

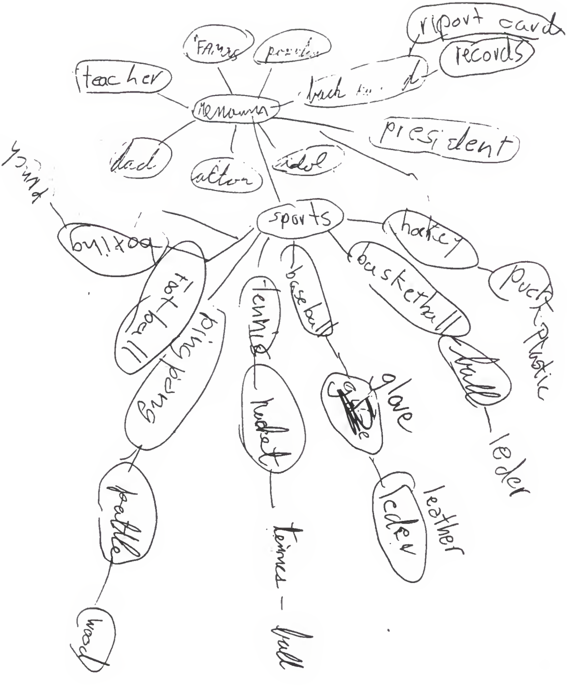

Figure 3-3. Small Group Map based on Student Input.

Nearly all of the students were very attentive. A few were taking notes. Several were actively soliciting items to add to the map. Most were just listening and watching. To provide multiple exposures, the teacher hung, throughout the room, maps on large poster boards. These were colorful maps of words from previous weeks.

Observation 5

In the final observation, 6 students were sitting around a large table facing the chalkboard. Each student had a blank sheet of paper and a dictionary. The teacher wrote the target word on the board, circled it, and asked students to find that word in the dictionary. Students wrote the target word on their papers, found the word in the dictionary, and then began creating their maps based on the dictionary definition, and anything else they thought was appropriate to add based on their prior knowledge of the word. She asked them not to talk at this time--none of them did. After about 5 minutes, she told them that it was time for them to share their work. Students politely suggested items to add to the map on the board that the teacher drew on the chalkboard based on what they put on their individual maps. Finally, she asked for students to say sentences using the words. She used this same process for all four words. Students in this group were very well-behaved, eager to learn, and followed procedures exactly as the teacher instructed.

Following the observation, the experimenter asked the students what they thought about mapping. One boy was especially enthusiastic to say that he really liked making the maps because it helped him to learn many words, and helped him to learn English. He continued for several minutes expanding on how they used mapping and why he liked it. A few other students spoke up saying that they too liked mapping and agreed with everything that the first boy said.

Semantic Feature Analysis Group

In the SFA group, the experimenter observed 4 of the 6 teachers using SFA in the classroom with students. There was more consistency in the procedures and application of SFA than there was in the SM group. This is probably because SFA is a more structured activity with perhaps less flexibility given the instructions that teacher were to follow.

Observation 1

In one classroom observation, the teacher began the lesson with, "If you remember, ***match***, raise your hand." Several students raised their hand, suggesting that they did remember that word from the previous lesson. This is how this teacher was providing repeated exposures to the word. She began her lessons with a review of the words from the previous lesson. She went on to review three more words. Many students impatiently raised their hands to offer their recollection of what the word meant.

The teacher then went on to begin the first target word for the day, "to *flatter* is to give someone a compliment." She asked students if they knew the meaning of the word, flatter. One student said, "I heard of it, but I don't know what it means." The teacher explained that to flatter was to give a compliment, but that there was usually a reason to give the compliment. She went on asking the students if they could think of some compliments that people might give for a reason. Students gave the following suggestions: (a) nice pet, (b) nice haircut, (c) beautiful eyes, (d) nice collection of baseball cards, (e) nice friends, (f) do good work/good student, (g) handsome, (h) pretty, (i) favorite child. The three features of this word described were: first, "male/female," and the symbol for this column was ***m***, ***f***, or ***m/f***. The second column was, "gotten this compliment." Students used a check mark as a symbol if they had gotten that compliment before in their life, or a ***0*** if they had not. The third column represented, "given this compliment." If the students had give that compliment in their life, they were to make a check mark as a symbol in the appropriate cell. If they had not given that compliment at any time, they were to mark a ***0***. Most of the students were copying the chart into their notebooks and completing the symbols in a way meaningful to them. Students were laughing and participating in the discussion in a way that showed that they were tapping their prior knowledge. When the teacher announced that the chart was finished and that they were going to begin the second one of four, one student commented, "Are we going to do all four words, it will take all day." They awaited a free period which followed this period. She warned that there would be no free time until they completed all four target words.

There were four posters pinned to a bulletin board on the side of the classroom. On each poster, the target word was underlined, followed by a brief definition of the word, and then the word was written and underlined in a complete sentence.

In the second chart, using the word ***momentous***, the teacher briefly explained the meaning of the word. She then asked students to give examples of momentous occasions in their lives. Students gave the following examples: (a) graduation, (b) 15th birthday, (c) become a parent, (d) first drive a car, (e) learning to swim, and (f) first day of school. The four features of these words were happy, scared, excited, and proud. If students thought that they would, or did, have that feeling for that momentous occasion, they were to make a check mark in the cell, if they did not think that they would have that feeling, they were to mark a *0*, and if they weren't sure, they were to mark a question mark (*?*) in the cell. Students were very interested in giving examples and talking about their prior experiences, so much so, that this activity done as a group put the teacher in a position to ask students to stop talking[22]. This ongoing discussion was an indication that prior knowledge was being tapped, and that students were enjoying the activity. The teacher continued with the following two SFA matrices. Although students were eager to talk and give their ideas related to the target word, because it was conducted as a group exercise, the teacher continually had to ask students to keep quiet. Overall, however, student participation did occur the majority of the time. In summary, the teacher provided several examples for each target word, and then allowed students to list their ideas. The teacher provided repeated exposures to the past words, and many of the students voluntarily took notes.

Observation 2

In this class, the teacher used the following process. Students were broken up into five groups of four students. Each of the four students had one of the four target words to look up. Students looked the words up in a dictionary and thought about related words to add to their chart that they began. After everyone in the group looked their words up in a dictionary, they had a few minutes to explain their words to each other. Students were to discuss the words in their groups, and add more related words and features to their individual charts. After this was complete, the teacher asked students to move to a class discussion. He randomly called on students to discuss the word that they had to look up. This generated conversation, especially among the students in the other groups who also had that word, as well as among other students in the class who had some prior knowledge, or new understanding of that word. This teacher used only a plus (+) and minus (-) system. In fact, when he called volunteers to the board to complete a class chart based on what they had discussed in their small groups, he began by saying, "now let's do the pluses and minuses." Students were very involved and appeared to be enjoying the strategy and the conversation. The teacher encouraged students to say what came to their mind. He asked guiding questions, but let the student at the board complete the chart in a way that was meaningful to the class. This allowed students to tap their prior knowledge and integrate it with the new information.

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[22] A possible solution might have been to have students work in pairs or small groups to complete the chart, and add additional related words or features if they thought of more.

Observation 3

In the third observation, the teacher began the activity with some role play, asking the students to act out some examples using the target word. She began with the target word, ***barter***. Related ideas included: give and receive, exchange, trade, transfer, contract transaction, agreement action, work instead of money. Students stood up and acted out some of the related ideas. Features included examples of items that might involve such a transaction: foods, books, votes, gifts, jokes, sport information, jobs, field trips, and ideas. Students in this class politely took turns to make suggestions for the chart. Nearly all of them were attentive to what the others had to say, and very willing to offer their ideas as well. The teacher marked a plus or minus in the cells based on their input. The teacher linked prior learning experiences from their class to the discussion. Small posters were hung across the top of the chalkboard with pictures depicting examples of the target word. Each picture had a label of a target word.

This teacher began each matrix with a short role play, having students act out the meanings of the related words before leading into an SFA chart, and completed each matrix similar to the one described above.

Observation 4

The fourth classroom observation was of the most innovative teacher. She created a competitive game of the SFA activity. Prior to class, she had written the previous target words on large cards. These words were pinned to a bulletin board. The teacher asked students to point to a word, pronounce it correctly and give its meaning. If successful, students could take the word and move it to a different location on the bulletin board indicating that the word was successfully reviewed.

The teacher then divided the class into 4 large groups, each with about 6 students. She had prepared 4 color poster boards with 8 x 8 grids. In addition, she provided small blank grids for students to make their own charts. The poster board grids were to be used to compile all the information from that group into one large grid. It was a timed exercise where each of the four groups was given one of the four target words. Students were asked to first, as individuals, think of words related to the target word and features of those words. Students did this on their individual charts while talking to others in their groups. Although they did copy many of the same words on their charts, each chart was slightly different based on what they thought made sense. When one student asked how to spell a word, she told students not to worry about spelling, but just to concentrate on the meaning. She encouraged students to help each other, and they did. Although the class was a bit noisy, the discussions were on task. The goal of the activity was for students to complete their individual charts, then their group charts, and finally to share their chart with the rest of the class. The first group to fill out all of the eight related words, eight features, and all of the cell symbols for their individual charts and their group charts was to say, "freeze." Students were to use the symbols, N (never), S (sometimes), and A (always). The teacher made good use of class time by dividing the four target words among the four groups. The activity concluded with each group of the students presenting their completed matrices to the class. See Figure 3-2 for a sample of a completed matrix.

Table 3-2
Sample of a Matrix Completed by a Small Group of SFA Students

	Clasp						
	skirt	car	shoe	paper	metals	earrings	watch
sit belt	N	A	N	N	N	N	N
buckle	N	N	A	N	N	N	N
belt	A	N	N	N	N	N	S
magnet	N	S	N	N	A	N	N
zipper	A	N	S	N	N	N	N
tie	S	N	A	N	N	N	N
clip	N	N	A	N	S	S	N

A probable weakness, however, of this teacher's design, is that only the group who completed the chart would have a thorough understanding of the related words and features, unless other students were to later read over the posters that the other students made. The advantage is that students would have repeated exposures to the words using the same technique that she began with--pointing to a word, pronouncing it correctly and then giving the meaning of the word.

The way that the teacher structured this activity was ideal for a variety of reasons. Students had opportunities to complete their own maps, thereby tapping their own prior knowledge. They also had opportunities to discuss among each other in their small groups. In addition, they had the opportunity to transfer their ideas to the group SFA grid on the large poster board. During the process of agreeing upon which related words and features, and which symbols should be marked on the poster board, students focused on the task and had motivation to complete it. Students in three of the four groups anxiously participated. However, the group that had the most difficult word, required a lot of the teachers' time because they did not have as much previous knowledge of the word as students had for the other three words. Of course the group who finished first felt very proud, and so did the second. The fourth group that had the most difficult word, perhaps did not benefit from this activity as much as the other three groups. However, overall, this was an outstanding application of the strategy on the part of the teacher who creatively used many resources to enhance the SFA strategy. The only problem was the fact that not all four of the words were equal in level of difficulty.

Workshops

Each of the treatment groups met (separately) for 45 minutes one time per week for 6 weeks. All workshops were held in one of the classrooms of a teacher participating in the study. The SM group met from 12:30 p.m. to 1:15 p.m. and the SFA group met, in the same classroom, from 1:30 p.m. to 2:15 p.m. The experimenter was careful not to allow the first group to linger beyond the scheduled time. Neither group was given information about the instructional strategy of the other group, but were told that, if interested, they would receive complete details of the study after its completion.

Both treatment groups received instruction, guidance, and feedback in their assigned vocabulary instructional strategy. Teachers were reminded each week of the four important steps that they were to be following: (a) identify target word(s); (b) tap students' prior knowledge; (c) classify using SM or SFA; and (d) provide multiple exposures. These four steps were developed based on the review of the literature and teachers' input from the pilot study. The researcher strived to simplify the strategies as much as possible so that teachers would not feel burdened with yet another classroom responsibility. The researcher hoped that teachers would find the strategies useful, not only for the vocabulary development purposes of the study, but also for other learning objectives. The researcher told teachers that it was not necessary to prepare lessons, that the strategies lend themselves to the spontaneity of students activating and tapping their prior knowledge.

Teachers were told that the students would not always agree on the content or placement of concepts when applying their strategies to the target words. They were told to anticipate this and let students know that it was ok. When disagreement arose, the students and teacher were to try to reach consensus by referring to dictionaries, class notes, or any other sources available. Teachers were encouraged to allow students to use English or bilingual (English/Spanish) dictionaries with the strategies (Saville-Troike, 1984). Where consensus could not be reached, the teacher's advice prevailed, but students were told that they could record the information in a way that made most sense to them.

As teachers became more confident about applying the strategy, the experimenter gradually decreased her participation in the teachers' discussion, and increased note taking and observations about teachers' presentations and comments. Teachers' often got into discussions about how they might apply the strategy to different lessons and for different purposes in class. The experimenter did not discourage such discussion, but reminded teachers to follow the instructional guidelines of the study and requested them to wait to apply their other ideas in the fall.

Teachers were given eight new target words each week. They divided the group of words into two groups of four for each 30 minute lesson. Most of the words were not semantically related, but some teachers paired or grouped words based on some ties between the words. Such examples came out when teachers demonstrated what they did in the classroom to other teachers in the workshops. Teachers were also asked to review all previous words to date, thereby providing multiple exposures to targeted words. They were asked to share their experience in working with the instructional strategy, and encouraged to point out advantages and disadvantages of the strategy. Teachers brought student samples and shared classroom experiences with other teachers. They often used the write/wipe board to illustrate a classroom example. The experimenter used workshop time to provide feedback to all teachers based on classroom observations, providing corrective feedback in the form of guided practice. The experimenter facilitated all workshops.

Teachers in Treatment A shared ideas that were helping students learn the target words through SM. Teachers were instructed to encourage students to provide most of the input for the classification activity, but to help them when they were unable to elaborate using their own knowledge, or dictionary. When students were instructed to create their own maps, or take notes based on a classroom activity, teachers were instructed to encourage students to use the class map only as a guide. Their own map was to be unique and not include information provided by the class if it wasn't meaningful to them. Their personal maps would probably include some additional strands and supports that did not apply to everyone in the class.

Teachers were told to encourage students to write their thoughts and that there were not always right and wrong answers. "The rationale for this procedure was that students would best understand and remember the words and ideas that were most closely related to their own experiences and knowledge (Brady, 1990). One instance in the pilot study, a teacher asked students to create a map based on the geographical characteristics of cities in Florida that they had studied--Orlando, Jacksonville, Tallahassee, Miami, and so on. One student attached a strand support to Orlando which said "beach." Rather than saying, "that's wrong, Orlando is not on the coast," the teacher asked the student why ***Orlando*** reminded her of ***beach***. The student proceeded to tell her that she took a trip to Orlando with her family, and during that same trip, they visited a beach. In such a case, the teacher might want to confirm that the student knows that Orlando is not a coastal city, and then allow her to revise or not revise her map as she wishes.

If, however, a teacher sees a link that does not appear to be "correct," and then through questioning, discovers that the student does not have an appropriate understanding, the teacher should be sure to point this out to the student. For example, if on a map with the core idea of *(recent) presidents of the United States* a student writes, Hillary

Clinton, as a primary strand, and then indicates that he believes that she ran for office and won, the teacher should point out that Bill Clinton is the president. The teacher could encourage the student to draw a strand support from Bill Clinton, and another indicating that she is his first lady. In addition, he may want to include first ladies of Bush, Reagan, and other presidents shown on the map.

Teachers in Treatment B shared ideas that were helping students learn the targeted words through SFA. Teachers were provided with blank SFA charts (see Appendix G). They were also told that they could use lined paper and have students fold the paper length-wise to create columns. During one of the workshops one ingenious teacher presented an idea using a blank sheet of paper. She suggested to fold a blank sheet several times length and width-wise. This allows students to create a matrix of folds to use for an SFA grid.

At the last workshop, following student and teacher posttests, teachers were asked whether the cost in class time was time well spent in relation to the benefits derived from either instructional strategy. All of the teachers indicated that the strategies were useful and that they would continue to use them for specific purposes in future classes.

Instrumentation

The instruments used in this study were the Stanford Achievement Test, and teacher prediction surveys.

Stanford Achievement Test

The SAT is a norm-referenced, nationally standardized test. It contains high reliability and is considered to be a highly valid measure of student achievement (Psychological Corporation, 1989). Two subtests from this achievement test were used, reading vocabulary and reading comprehension. Students took the eighth edition of the SAT Intermediate 3 (6th grade), Form J. Although students had finished seventh grade and were in a summer school program in preparation for eighth grade, a sixth grade test was used due to their limited English proficiency. The same vocabulary and reading comprehension subtests of the SAT, Intermediate 3, Form J, were used for both the pretest and posttest for both treatment groups. All pretests and posttests were hand scored by the experimenter.

The vocabulary subtest consisted of 40 multiple choice items, and three subsections--synonyms, vocabulary in context, and multiple meanings. The first section, synonyms, required students to choose one word among four that means about the same as a word underlined in a short phrase. The second section, vocabulary in context, required students to read a complete (contextual) sentence with one word underlined, then select one word among four which means about the same as the underlined word. The third section, multiple meanings, required students to read a complete sentence with one word underlined, then select one sentence among four which uses the underlined word in the same way. All words selected for this study were in the stem of the item question. Students had 25 minutes to complete the vocabulary subtest.

The reading comprehension subtest consisted of 54 items and six possible subscores--recreational reading, textual reading, functional reading, and literal, inferential, and critical comprehension. For purposes of this study, reading comprehension subscores were not calculated. The reading comprehension section consisted of nine passages. For each passage, students were required to read questions about the passage, and decide which of four possible answers was best. Because of the diversity of the language proficiency levels of the students, they were given up to 50 minutes for the reading comprehension subtest. Several teachers reported that the low level students appeared frustrated and did not use the full amount of time. Teachers were told to encourage students, even students at the lowest proficiency, to at least try to guess what they thought was the best answer, rather than leaving any items blank.

In scoring the vocabulary and reading subtests, students received a *0* when the item was answered incorrectly or not at all, and a *1* when the item was answered correctly. All tests were corrected and then double checked by the experimenter one week later.

Internal consistency test reliability is reported in Table 3-3 (Psychological Corporation, 1989).

Table 3-3
Kuder-Richardson Formula #20 Reliability Coefficients, Standard Errors of Measurement, and Related Data for the Intermediate 3 Spring Standardization Sample for Form J

Subtest/Total	Number of items	N	M	SD	r	SE_m
Reading Vocabulary	40	4991	25.6	7.9	.89	2.7
Reading Comprehension	54	4981	34.1	10.5	.92	3.1
Total Reading	94	4977	59.7	17.6	.95	4.1

Teacher Prediction Survey

During the first week of the study, teachers were given a pretest to predict their students' prior knowledge of the targeted words (see Appendix B). SM and SFA are informal ways for teachers to assess their students' knowledge of words. It was therefore hypothesized that after using the strategies, teachers may be better able to predict their students knowledge of the targeted words. During the last week of the study, teachers were given a posttest to judge their students' performance on the vocabulary subsection of the SAT (see Appendix J).

The unit of analysis for teachers' ability to predict was the average differences between the teachers' prediction and the actual scores of the students in their class on the 40 items. Teachers were asked to predict what percentage of students in their classes would answer each of the 40 items correctly. Student scores were averaged by class. The analysis was performed on both the average differences and the absolute value of the differences between teachers' predictions and students' actual performance. To analyze of the average differences, the dependent variable *Y* was defined as

$$Y = \frac{\Sigma (T_1 - C_1)}{n}$$

where T_1 is the teacher prediction of the percent correct for each item, and C_1 is the actual percent correct achieved by the class for each item, and n is the number of items (n=40). For the absolute value analysis of the differences, Y was defined as

$$Y = \frac{\Sigma (| T_1 - C_1 |)}{n}$$

with T_1, C_1, and n defined as above.

Experimental Design

A quasi-experimental design was chosen since it was not possible to randomly assign subjects to teachers or teachers to treatments. During the first meeting, teachers were asked if they had a preference to attend the first meeting to be held at 12:30 p.m. or the second, to be held at 1:30. Teachers were placed into treatments based on their time preference. A pretest and posttest was used to compare the effectiveness of two vocabulary instructional strategies, SM and SFA. The design chosen for the first two hypotheses was an analysis of covariance (ANCOVA). The covariates were the student pretests. The number of classes, teachers and students by treatment are shown in Table 3-4. As the table illustrates, classes are nested in treatments (i.e., each class participates in only one of the two treatments).

Table 3-4
Nested Design Structure Showing Classes, and Number of Teachers and Students by Treatment

Treatment	Classes	Teachers	Students
SM	1	2	9
	2	2	7
	3	1 (+1 TA)	6
	4	1	3
	5	1	5
SM Total	5	7 (+1 TA)	30
SFA	6	1	8
	7	1	4
	8	1	3
	9	2	4
	10	1	7
SFA Total	5	6	26
TOTAL SM+SFA	10	13 (+1 TA)	56

Pretests were given to teachers and students during the first week of the study. Treatment and workshops occurred over a 5 week period. Classroom observations did not begin until the second week of the study, and therefore occurred over a four week period. Posttests were given to teachers and students during the last week of the study (See Table 3-5).

Table 3-5
Experimental Design

Week	1	2	3	4	5	6
SM Group	0	XX	XX	XX	XX	XX0
SFA Group	0	XX	XX	XX	XX	XX0
Teacher Prediction Surveys	0					0
Classroom Observations			0	0	0	0

0 = Pretests, posttests & Classroom Observations
X = Treatment (30-minutes each)

Data Analysis

Several techniques were employed to test the three hypotheses. The statistical method used for the first two hypotheses was an analysis of covariance (ANCOVA). The researcher considered a repeated measures design, but since the purpose was to compare overall group performance between treatments, an ANCOVA was used. This design allowed the experimenter to equate groups on pretest differences so they could be compared by treatment. Posttest means were compared using the pretest scores as covariates. SAT Intermediate 3, Form J reading vocabulary and comprehension subtests were used to test the first two research questions. Comparison of the adjusted means for both treatment groups determined if they were significantly different from one another.

Independent sample t-tests were used to test the third hypothesis, using the teacher prediction survey. The analysis studied the effect of the following teacher variables on teachers' prediction ability: native language, ESOL certification, educational level, and number of years of teaching experience. These were the second factors in each of the four ANOVAs. The first factor in each case was the treatment. All factors were between subjects.

CHAPTER 4
FINDINGS

The purpose of this study was to examine whether SM or SFA was effective in helping seventh grade Spanish-speaking LEP students to improve their knowledge of targeted words. Both vocabulary (including 3 subscores) and reading comprehension were assessed. Teacher prediction of student prior knowledge was also assessed by comparing teacher posttest surveys to student posttest scores by item. Included in the data analysis as independent variables for teacher posttest scores were ESOL certification, English as their native language, number of years of teaching experience, and highest educational degree achieved.

To test the first hypothesis proposed in Chapter 1, an analysis of covariance was used to compare the gains of students from the vocabulary pretest means to posttest means by treatment. To test the second hypothesis, an analysis of covariance was used to compare the gains of students from the reading pretest means to posttest means by treatment. Students did not show significant gains in either group. To test for the third hypothesis, whether teachers were able to predict students' prior knowledge of the targeted words, teachers were given a pretest (see Appendix B). To test whether teachers were able to predict their students' scores after using their assigned vocabulary learning strategies (SM or SFA), teachers were given a posttest (see Appendix J). A t-test was used to test whether teachers were able to predict their students' knowledge of the targeted words after using the treatment. Results showed that teachers were not able to predict with any significant accuracy, after using the treatment, their students' knowledge of the targeted words. Descriptive statistics were compiled to relate pertinent data. Following tables reporting descriptive statistics, the results of statistical tests are presented by hypothesis.

Results

Means and standard deviations for the two groups of students on reading and vocabulary pretest and posttest scores are presented in Table 4-1.

Table 4-1
Means and Standard Deviations for Pretest and Posttest Measures by Treatment

SAT Subtests	SM (N=30) Pretest	SM (N=30) Posttest	SFA (N=26) Pretest	SFA (N=26) Posttest
Vocabulary				
Synonyms				
M	7.97	11.43	7.96	13.29
SD	2.37	4.26	2.31	5.00
Vocabulary in context				
M	3.57	4.37	4.15	4.84
SD	1.89	1.92	1.87	1.93
Multiple meanings				
M	2.60	3.30	2.73	3.81
SD	1.48	2.02	1.46	1.96
Total				
M	14.10	19.06	14.84	21.84
SD	4.51	6.26	4.58	7.60
Reading				
M	18.20	17.63	18.84	19.16
SD	6.81	5.61	4.21	6.05

Grade equivalence for the two groups of students on reading and vocabulary pretest and posttest scores are presented in Table 4-2.

Table 4-2
Grade Equivalence for Pretest and Posttest Means

SAT Subtests	SM (N=30) Pretest	 Posttest	SFA (N=26) Pretest	 Posttest
Vocabulary				
M	14.10	19.06	14.84	21.84
GE	3.7	4.9	3.8	5.4
Reading				
M	18.20	17.63	18.84	19.16
GE	3.3	3.2	3.5	3.5

Means and standard deviations for teachers' predictions are presented in Table 4-3. Pretest values are the difference between the teachers' pretest scores and the means of their class pretest scores. These values ranged from -28.33 to 40.35. ABPretest values are the absolute value of the difference between the teachers' pretest scores and the means of their class pretest scores. These values ranged from 21.00 to 44.95. Posttest values are the difference between the teacher's posttest scores and the means of their class posttest scores. These values ranged from -4.75 to 41.30. ABPosttest values are the absolute value of the difference between the teachers' posttest scores and the means of their class posttest scores. These values ranged from 22.78 to 46.95.

Table 4-3
Means and (Standard Deviations) for Pretest, ABPretest, Posttest and ABPosttest Measures by Teacher

Teacher	Trt	Pretest	ABPretest	Posttest	ABPosttest
1	SM	-20.75 (36.26)	34.25 (23.52)	20.30 (27.91)	27.55 (20.57)
2	SM	-18.36 (36.87)	33.38 (23.73)	2.80 (32.63)	27.20 (17.72)
3	SM	10.30 (31.15)	28.15 (16.32)	24.28 (25.93)	29.08 (20.24)
4	SM	6.52 (38.64)	30.78 (23.78)	29.28 (26.28)	32.08 (22.68)
5	SF	6.25 (32.90)	26.45 (20.12)	34.60 (28.92)	36.90 (25.84)
6	SF	-3.50 (27.41)	21.00 (17.66)	40.50 (28.48)	41.00 (27.74)
7	SM	* (*)	* (*)	41.30 (35.70)	46.95 (27.62)
8	SF	-28.33 (28.96)	30.33 (26.80)	4.57 (29.20)	23.92 (16.95)
9	SF	-0.38 (36.70)	28.38 (22.83)	30.50 (37.41)	37.25 (30.51)
10	SM	40.35 (36.34)	44.95 (30.30)	* (*)	* (*)
11	SM	23.95 (30.77)	32.15 (21.79)	38.55 (30.53)	41.00 (27.06)
12	SF	-5.20 (27.30)	22.10 (16.50)	12.67 (25.95)	22.78 (17.50)
13	SF	34.25 (35.69)	41.50 (26.66)	26.25 (40.84)	38.75 (28.88)
14	SM	8.00 (39.43)	31.00 (25.20)	-4.75 (34.57)	28.25 (19.99)

* Missing data.

Means and standard deviations for teachers' predictions by treatment are presented in Table 4-4. Pretest values are the difference between the means of the teachers' pretest scores by treatment and the means of students' pretest scores by treatment. ABPretest values are the absolute value of the difference between the means of the teachers' pretest scores by treatment and the means of students' pretest scores by treatment. Posttest values are the difference between the means of the teacher's posttest scores by treatment and the means of the students' posttest scores by treatment. ABPosttest values are the absolute value of the difference between the means of the teachers' posttest scores by treatment and the means of students' posttest scores by treatment.

Table 4-4
Means and Standard Deviations for Pretest, ABPretest, Posttest and ABPosttest Measures by Treatment

	Pretest	ABPretest	Posttest	ABPosttest
SM				
M	7.14	33.52	22.00	32.84
SD	40.71	24.10	34.36	23.43
SFA				
M	0.71	28.16	24.85	33.51
SD	36.45	22.92	34.27	25.93

Hypothesis 1: There is no significant effect of treatment on student posttest vocabulary comprehension, after adjustment for the pretest score.

Using an analysis of covariance, the treatment effect on the total vocabulary subtest score was not significant ($F_{.05,1,8} = 6.18$) (see Table 4-5). Therefore, the null hypothesis was not rejected, and the SFA posttest mean of 21.84 was interpreted as not significantly greater than the SM posttest mean of 19.06 (see Table 4-1).

Table 4-5
Analysis of Covariance to Test the Effect of Treatment on the Total Score of the Vocabulary Subtest

Source	df	SS	MS	F	Pr>F
PrevocT	1	1053.88	1053.88	46.35	0.0001
Trt	1	165.81	165.81	1.82	0.2143
Class(Trt)	8	728.94	91.12	4.01	0.0012
Error	45	1023.28	22.74		

Three additional analyses of covariance were run to test whether any of the three vocabulary subtest scores (synonyms, vocabulary in context, and multiple meanings) were significant. None were found to be significant.

Hypothesis 2: There is no significant effect of treatment on student posttest reading comprehension, after adjustment for the pretest score.

Using an analysis of covariance, the treatment effect on the total reading comprehension score was not significant ($F_{.05,1,8}$ = 0.38) (see Table 4-6). Therefore, the null hypothesis was not rejected, and the SFA posttest mean of 19.16 was interpreted as not significantly greater than the SM posttest mean of 17.63 (see Table 4-1).

Table 4-6
Analysis of Covariance to Test the Effect of Treatment on the Total Score of the Reading Subtest

Source	*df*	SS	MS	F	Pr>F
Preread	1	154.98	154.98	6.00	0.0183
Trt	1	7.66	7.66	0.13	0.7283
Class(Trt)	8	473.06	59.13	2.29	0.0382
Error	44	1136.31	25.83		

Hypothesis 3: There is no significant effect of treatment on the teachers' ability to predict students' prior knowledge of the targeted words.

The unit of analysis for teachers' ability to predict was the average difference between the teachers' prediction and the actual scores of the students in their class on the 40 items. Teachers were asked to predict what percentage of students in their classes would answer each of the 40 items correctly. Student scores were averaged by class. The analysis was performed on both the average differences and the absolute value of the differences between teachers' predictions and students' actual performance. To analyze of the average differences, the dependent variable *Y* was defined as

$$Y = \frac{\Sigma (T_i - C_i)}{n}$$

where T_i is the teacher prediction of the percent correct for each item, and C_i is the actual percent correct achieved by the class for each item, and n is the number of items (n=40). For the absolute value analysis of the differences, Y was defined as

$$Y = \frac{\Sigma (| T_i - C_i |)}{n}$$

with T_i, C_i, and n defined as above.

As indicated in Table 4-4, the absolute value pretest means on the prediction survey pretest were 33.52 and 28.29 for SM and SFA respectively. Using a t-test, teacher variances on the prediction survey pretest were equal ($t_{.05,1,8} = -0.55$) (see Table 4-7).

Table 4-7
Results of t-test to Compare the Absolute Value of Teacher Pretests

TRT	N	Mean	Std Dev	Std Err	Min	Max
SM	6	28.16	7.52	3.07	21.00	41.50
SF	7	33.52	5.41	2.05	28.15	44.95

As indicated in Table 4-4, the absolute value posttest means on the prediction survey pretest were 33.51 and 32.84 for SM and SFA respectively. Using a t-test, the treatment effect on the prediction survey posttest was not significant ($t_{.05,1,8}$ = 0.16) (see Table 4-8). Therefore, the null hypothesis was not rejected, and the SFA teacher posttest mean of 33.51 was interpreted as not significantly greater than the SM teacher posttest mean of 32.84 (see Table 4-4).

Table 4-8
Results of t-test to Test the Effect of Treatment on the Absolute Value of Teacher Posttests

TRT	N	Mean	Std Dev	Std Err	Min	Max
SM	6	33.51	7.81	3.19	23.28	41.00
SF	7	32.84	7.10	2.69	27.2	44.70

Included in the data analysis as independent variables for teacher posttest scores were ESOL certification, English as their native language, number of years of teaching experience, and highest educational degree achieved. It was important to determine if any of these variables accounted for the significant difference between teachers' ability to predict student performance on the vocabulary subtest of the SAT. Using analysis of covariance to compare treatment effect on both the difference between the teachers' predictions and students' performance, and the absolute value of the difference between the teachers' predictions and students' performance, none of these factors were found to be significant at the .05 level. It was interpreted that none of the four factors influenced teachers' ability to predict students' performance on the posttest.

CHAPTER 5
DISCUSSION

The purpose of this study was to investigate the effects of SM and SFA on vocabulary and reading subtests of seventh grade Spanish-speaking LEP students. The secondary purpose was to investigate the effects of SM and SFA on teachers' ability to predict students' knowledge of targeted words. To investigate the effects on vocabulary and reading ability, the SAT vocabulary and reading comprehension subtests were used. Fifty-six seventh grade Spanish-speaking LEP students participated in this investigation. A series of analyses of covariance using a nested design were conducted to test the first two hypotheses. To investigate teachers' ability to predict students' knowledge of forty targeted words, teachers were administered a prediction survey the first and last weeks of the study. A t-test was conducted to determine teachers' ability to predict students' knowledge of targeted words after using the instructional strategies.

The results of this study are discussed according to the major findings. Implications for practice and recommendations for future research are also discussed.

Findings

Each of the major findings of this study are discussed by hypothesis.

> Hypothesis 1: There is no significant effect of treatment on student posttest vocabulary comprehension, after adjustment for the pretest score

Applying SM and SFA to target words resulted in an increase in students' vocabulary outcomes on all three subscores: synonyms, vocabulary in context and multiple meanings. Although students in the SFA treatment group outperformed students in the SM group on vocabulary means outcomes (see Figure 5-1), the results were not significant. The higher mean of the SFA group was due primarily to their performance on the synonyms subscore on the vocabulary subtest (see Figure 5-3).

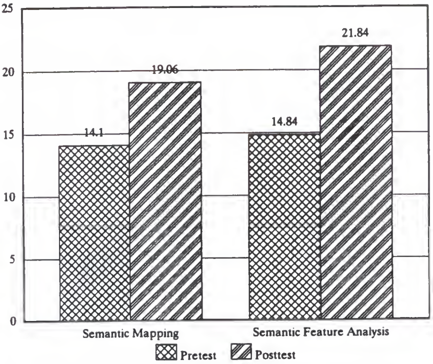


Figure 5-1. Vocabulary Pretest and Posttest Means by Treatment.

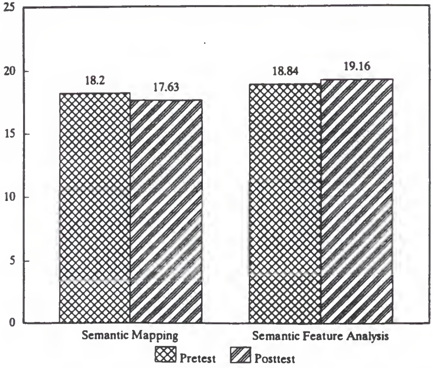


Figure 5-2. Reading Pretest and Posttest Means by Treatment.

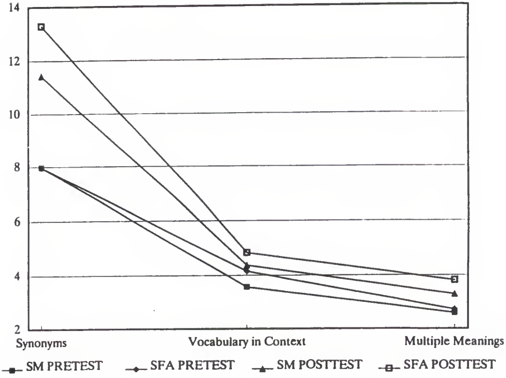


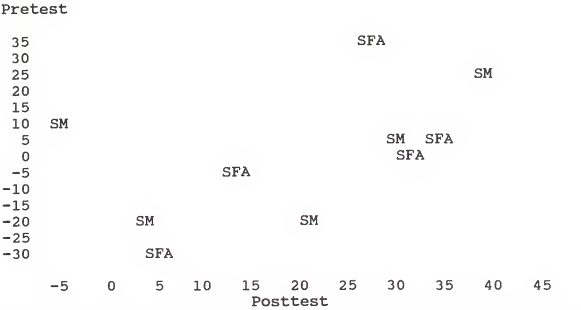
Figure 5-3. Means for Vocabulary Pretest and Posttest Subscores by Treatment.

> Hypothesis 2: There is no significant effect of treatment on student posttest reading comprehension, after adjustment for the pretest score.

Applying SM and SFA to target words did not result in improvement of students' reading comprehension outcomes (see Figure 5-2).

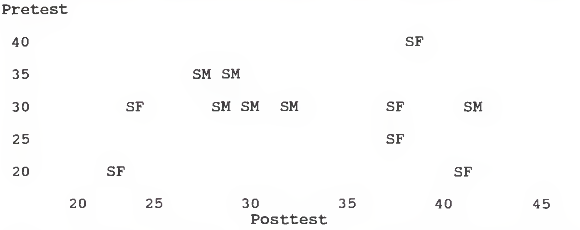
> Hypothesis 3: There is no significant effect of treatment on teachers' ability to predict students' prior knowledge of the targeted words.

The teacher pretest showed that teachers in both groups were not able to predict what words their students know. Posttest measures showed that teachers' ability to predict students' knowledge of target words did not improve through the use of the strategies, although some teachers were better predictors than others. Results of teacher pretest and posttest scores are shown in terms of the difference between the teachers' predictions and the class scores and the absolute value of the difference between the teachers' predictions and the class scores (see Figures 5-4 and 5-5). A Pearson Correlation Analysis was run to compare teacher pretest and posttest measures by treatment (r = .45). A Pearson Correlation Analysis was run to compare the absolute value of teacher pretest and posttest measures by treatment (r = .07).



Note: Two teachers were eliminated from this figure (one had a missing pretest, and one had a missing posttest).

Figure 5-4. Teacher Pretest and Posttest Measures by Treatment.



Note: Two teachers were eliminated from this figure (one had a missing pretest, and one had a missing posttest).

Figure 5-5. Absolute Value of Teacher Pretest and Posttest Measures by Treatment.

Four factors were examined in an attempt to determine why some teachers might be better predictors: (a) whether or not their native language was English, (b) the level of their highest educational degree earned (associate's, bachelor's, master's, or specialist's degree) (c) whether or not they were certified in ESOL, and (d) their number of years of teaching experience. Although some teachers were statistically significant better predictors than others, none of these factors approached statistical significance to account for this difference.

Discussion

This study adds to the body of evidence that SM and SFA are viable vocabulary instructional strategies, and establishes their use with a population of Spanish-speaking LEP students. LEP students are designated as such by the very fact of their low performance on standardized tests such as the SAT. LEP students represent a population seldom involved in SM and SFA research.

Implications

In evaluating the results of this experiment, consideration should be given to the fact that it took place in 10 classrooms, with ESOL teachers and LEP students. Classroom observations revealed a wide variety of circumstances under which SM and SFA were applied as vocabulary learning strategies. This investigation supports findings of previous research in vocabulary learning strategies. This experiment has shown that both SM and SFA are viable strategies for Spanish-speaking LEP students to learn word synonyms. This finding, along with practical applications, could be discussed in preservice and inservice programs for teachers of LEP students. In addition, teachers should be aware of the variety of applications for both strategies. Although not statistically significant, SFA students also outperformed SM students on the vocabulary in contexts and multiple meanings subscores on the vocabulary subtest (see Figure 5-3), on the total score of the vocabulary subtest (see Figure 5-1), and on the reading comprehension subtest (see Figure 5-2). Because students in the SFA group scored slightly higher than those in the SM group on the pretest, it's possible that the higher ability students were able to benefit more by learning a strategy. Reading comprehension did not improve significantly for either treatment group. Finally, this study suggests that teachers are not able to predict accurately which words their students know, either before or after using the treatment.

Vocabulary

This study did not find significant effects of treatment on vocabulary comprehension, but this study suggests that SFA may be slightly more effective than SM for learning synonyms. The most obvious reason for the better performance of students in the SFA group is that SFA is, perhaps, a more effective strategy for learning synonyms. Another explanation is that SFA drives students to complete the grid as they see their peers making decisions and marks in the grid cells. Not only do they want to finish with their friends, many want to do so accurately so as not to appear as if they don't know the words. This competitive aspect of the strategy, observed in the classroom, may push them to understand the nuances of meaning among related words.

Although students in the SM group showed significant gains in vocabulary, it was not as great as that of the SFA group. A reasonable explanation is that SM allows students to map a lot of tangentially related information, possibly losing focus on the meaning of the target word. It may be, however, that SM is a more effective at having students make gains in other, more global understandings of words, such as providing examples of other related concepts.

Reading Comprehension

Students in the SFA group made insignificant gains in reading comprehension, while the SM group slightly lowered their performance (see Figure 5-2). It may be that SFA was slightly more effective than SM in helping students to improve their reading comprehension. However, because the target words were not selected in relation to the reading comprehension passages on the SAT, it was unlikely that students' reading comprehension would improve in less than two months. Student scores in the SM group may have dropped from pretest to posttest because the posttest was given during the last week of summer school, and they may have been less motivated to complete a 55-minute reading exam. It is possible that student reading posttest scores may have been higher for both groups if it had not been the last week of summer school.

Teachers' Prediction Ability

An important finding of this study is that the teachers were not able to predict their students' knowledge of words before or after using the strategies. In the first chapter, the researcher questioned whether teachers were able to select target words for students. In Chapter 2, a review of the literature showed some techniques to help teachers in target word selection. It is possible, however, that the prediction survey created by the experimenter was neither valid nor reliable, and therefore not an appropriate assessment instrument for purposes of this study. A second possibility is that teachers are able to judge which words their students know and do not know within their content area, but not able to do so with random words selected from a standardized multiple choice student achievement test. Future research might investigate the use of SM and SFA on a group of words within one thematic unit in one content area.

Limitations of the Study

This study is limited by the fact that the researcher chose to study only LEP students in self-contained programs. The fact that only Spanish-speaking LEP students were represented in the study also limits the generalizability of the experiment. The sample size and length of treatment reflected the constraints of a study conducted during a summer school program. In addition, students were not randomly assigned to treatment groups. The small sample size of 56 students limited the variation within the sample and the generalizability of the results.

Recommendations for Future Research

This study ascertained and expanded previous research by examining effects of SM and SFA on LEP students' vocabulary and reading comprehension. Both techniques provide scaffolding for discussion about concepts. Future research in this area could explore a variety of topics, including the following suggestions made by the researcher.

First, it would be useful to test students' ability to apply or transfer SM and SFA to subsequent tasks or situations. Because both strategies have countless applications to classifying and learning concepts, students could practice using the strategies in a variety of contexts. A methodical procedure or checklist for classroom observations could be created to help focus in on what benefits students might achieve from these strategies. Both strategies can be easily modified for a variety of purposes in any content area class. It might be useful to exploring the usefulness of vocabulary development using SM and SFA with LEP students in mainstream content area classrooms. It's logical for ESOL teachers to provide LEP students with strategies that they can use to learn not only the language, but also content. A study coordinating LEP and regular students would be beneficial, especially over a longer period of time during the regular school year.

Second, the part of this study dealing with SM and SFA as vocabulary learning strategies should be replicated with different populations of LEP students (e.g., of different ages, countries of national origin, and native languages) to increase the generalizability of the study. If this study is to be replicated, it is recommended that it be done, not only with ESOL teachers and LEP students, but also with regular classroom content area teachers and regular students.

Third, related research could investigate the strategies for ESOL teachers to activate and tap LEP students' prior knowledge of concepts. Further research in the area of tapping and activating LEP students' prior knowledge would be worthwhile in helping teachers and students to select which words deserve direct instruction. Further research could investigate what teacher qualities might account for some teachers being better predictors than others.

Fourth, future related research might control for teacher differences through (a) a more comprehensive teacher training program on how to apply the strategies for vocabulary learning, or (b) a prescreening of teachers to select only those teachers who have characteristics favorable to the vocabulary learning strategies. Controlling for teacher differences will help to ensure that the results are indeed treatment differences, and not teacher differences.

Fifth, it would be interesting to see effects of SM and/or SFA on student reading comprehension when key words from the reading passages were targeted. Key words can be selected by the researcher, the teacher, or the students. Because class time is so limited, in relation to the multitude of words, it would be valuable to know what differences result depending on who selects the targeted words.

Finally, research comparing SM and SFA to other vocabulary learning techniques would be valuable.

Summary

This study examined the effectiveness of SM and SFA on the vocabulary and reading comprehension abilities of Spanish-speaking LEP students. It also examined teachers' ability to predict their students' knowledge of target words. This study contributes to the knowledge that SM and SFA are viable vocabulary learning strategies. It also shows evidence that teachers may not be good predictors of their students' knowledge of words.

APPENDIX A
TEACHER PROFILE

Name ____

School ____

School address ____

____

School phone number ____

Home address ____

____

Home phone number ____

Your native language ____

Bilingual (circle one) yes no (If yes, please list below)

Other languages ____

Country of national origin ____

Date of birth ________________ Race ____________________

Gender (circle one) male female

Number of years of teaching experience ____________________

Highest educational degree earned ____________________

Certification subject area(s) ____________________

____

Describe your ESOL training ____________________

Number of 7th grade Spanish-speaking LEP students in your summer school class ________________

Meeting time (please check your preference)

1st meeting time ______

2nd meeting time ______

APPENDIX B
TEACHER PREDICTION SURVEY PRETEST

Teacher Prediction of Student Prior Knowledge

____
NAME

Consider your seventh grade Spanish-speaking limited English proficient students. For the following words, what percentage of your students (from this population) do you predict will be able to answer vocabulary multiple choice items correctly on a standard achievement test?

Sample A

huge	10	20	30	40	50	60	70	[✓ 80]	90	100

The teacher predicts that 80% of his/her seventh grade Spanish-speaking students will be able to respond correctly to a multiple choice item testing the word "huge."

1. word[1]	10	20	30	40	50	60	70	80	90	100
2. word	10	20	30	40	50	60	70	80	90	100
3. word	10	20	30	40	50	60	70	80	90	100
4. word	10	20	30	40	50	60	70	80	90	100
5. word	10	20	30	40	50	60	70	80	90	100
6. word	10	20	30	40	50	60	70	80	90	100
7. word	10	20	30	40	50	60	70	80	90	100
8. word	10	20	30	40	50	60	70	80	90	100
9. word	10	20	30	40	50	60	70	80	90	100
10. word	10	20	30	40	50	60	70	80	90	100
11. word	10	20	30	40	50	60	70	80	90	100
12. word	10	20	30	40	50	60	70	80	90	100
13. word	10	20	30	40	50	60	70	80	90	100
14. word	10	20	30	40	50	60	70	80	90	100
15. word	10	20	30	40	50	60	70	80	90	100
16. word	10	20	30	40	50	60	70	80	90	100

17. word 10 20 30 40 50 60 70 80 90 100

18. word 10 20 30 40 50 60 70 80 90 100

19. word 10 20 30 40 50 60 70 80 90 100

20. word 10 20 30 40 50 60 70 80 90 100

21. word 10 20 30 40 50 60 70 80 90 100

22. word 10 20 30 40 50 60 70 80 90 100

23. word 10 20 30 40 50 60 70 80 90 100

24. word 10 20 30 40 50 60 70 80 90 100

25. word 10 20 30 40 50 60 70 80 90 100

26. word 10 20 30 40 50 60 70 80 90 100

27. word 10 20 30 40 50 60 70 80 90 100

28. word 10 20 30 40 50 60 70 80 90 100

29. word 10 20 30 40 50 60 70 80 90 100

30. word 10 20 30 40 50 60 70 80 90 100

31. word 10 20 30 40 50 60 70 80 90 100

32. word 10 20 30 40 50 60 70 80 90 100

33. word 10 20 30 40 50 60 70 80 90 100

34. word 10 20 30 40 50 60 70 80 90 100

35. word 10 20 30 40 50 60 70 80 90 100

36. word 10 20 30 40 50 60 70 80 90 100

37. word 10 20 30 40 50 60 70 80 90 100

38. word 10 20 30 40 50 60 70 80 90 100

39. word 10 20 30 40 50 60 70 80 90 100

40. word 10 20 30 40 50 60 70 80 90 100

[1] The forty terms used in this study were taken from the forty item stems of the vocabulary subtest of the eighth edition of Stanford Achievement Test Intermediate 3, Form J. For test security purposes, all forty items have been replaced with ***word***.

APPENDIX C
PARENTAL INFORMED CONSENT LETTER

July 5, 1993

Dear Parent,

I am a graduate student at the University of Florida. As part of my dissertation research I need to gather information on the vocabulary and reading comprehension levels of seventh grade Spanish-speaking students. I will need to administer two vocabulary and reading comprehension tests consisting of items from the Stanford Achievement Test, a test normally given in Broward County. This will take approximately 55 minutes during the first week of the summer school program, and approximately 55 minutes during the last week of the summer school program. This testing will be administered by the teacher.

This study involves the intervention of a vocabulary learning strategy to be used in class for about 30 minutes twice a week. Children who take part in this study may benefit by learning a strategy which may help them continually increase their vocabulary. Your child's name will remain anonymous. Individual scores will be kept confidential through a coding system. Only group scores will be published. Teachers who participate in the study will receive teacher appreciation awards.

You and your child have the right to withdraw your permission to participate in the study or to withdraw your permission for me to use your child's data without any penalty or prejudice. Your child's participation or non-participation in this study will not affect his/her grade in any class.

If you have any questions regarding this study, please leave a message for Lorraine Clayton at Dr. Nancy Terrel's office at (305) 767-8413, and I will get back to you as soon as possible.

Sincerely,

Lorraine Clayton

[please tear here, keep top portion]

I have read and I understand the procedure described above. I agree to allow my child, ______________________________, to participate in Lorraine Clayton's vocabulary study and I have received a copy of the description.

SIGNATURES:

______________________________ ____________

parent/guardian date

______________________________ ____________

2nd parent/witness date

[Spanish translation on opposite side]

5 de julio de 1993

Estimado padre,

Soy una estudiante graduada de la Universidad de la Florida. Como parte de mi disertación yo necesito recoger información sobre el nivel de vocabulario de estudiantes que hablan español y que están en el séptimo grado.

Yo necesito administrar dos exámenes de comprensión en vocabulario y lectura que consisten en preguntas del Stanford Achievement Test, el cuál es un examen normalmente administrado en el Condado de Broward.

Esto tomará apróximadamente 55 minutos y se administrará la primera y la última semana del programa de la escuela de verano. Este examen será administrado por la maestra.

Este estudio envuelve la intervención de una estrategia de aprendizaje de un vocabulario que será usado en la clase alrededor de 30 minutos dos veces por semana. Los estudiantes que tomen parte en este estudio pueden beneficiarse aprendiendo esta estrategia la cuál los puede ayudar a aumentar su vocabulario. El nombre de su niño(a) permanecerá anónimo.

El resultado individual de este examen se mantendrá anónimo a través de un sistema de código. Solamente la puntuación del grupo será publicada. Los maestros que participen en este estudio recibirán un premio de apreciación.

Usted y su niño(a) tienen derecho a negar su permiso a participar en el estudio o cancelar su permiso para que yo utilice los datos de su niño(a) sin ninguna penalidad o perjuicio. La participación o no de su niño(a) en este estudio no afectará la calificación de él o ella en ninguna clase.

Si tiene alguna pregunta en referencia al estudio, favor deje un mensaje para Lorraine Clayton en la oficina de la Dra. Nancy Terrel al número de teléfono (305) 765-8413 y yo la llamaré lo antes posible.

Sinceramente,

Lorraine Clayton

Por favor corte en la línea de abajo y quédese con la parte de arriba

- -

Yo he leido y entendido el procedimiento descrito arriba. Estoy de acurdo en permitir que mi hijo(a) ______________________________, participe en el estudio de vocabulario de Lorraine Clayton, del cual he recibido una copia de su descripción.

FIRMAS:

______________________________ ____________________

padre/tutor fecha

______________________________ ____________________

padre/tutor fecha

APPENDIX D
STUDENT ASSENT SCRIPT

July 5, 1993

Dear Student,

I am a student at the University of Florida. I need to get some information on your vocabulary and reading levels. I will need to give you two vocabulary and reading tests. The first test will take about 55 minutes and be given the first week of summer school. The second test will take about 55 minutes and be given the last week of summer school.

I am asking you and your parent(s) for your permission to participate in this study. If you agree to participate, please sign your name below.

Thank you.

Sincerely,

Lorraine Clayton Kandor

I, ______________________________, agree to participate in Lorraine Clayton Kandor's vocabulary study.

____
date

APPENDIX E
STUDENTS' EDUCATIONAL BACKGROUND SURVEY

Date: ________________________________

Student's Name: ________________________________

Student's Country of National Origin: ______________________

Sex ___________ Age _______________

Assigned School/Center: ________________________________

Lunch Program:

Free Yes _____ No _____

Reduced Yes _____ No _____

Does the student read in the home language?

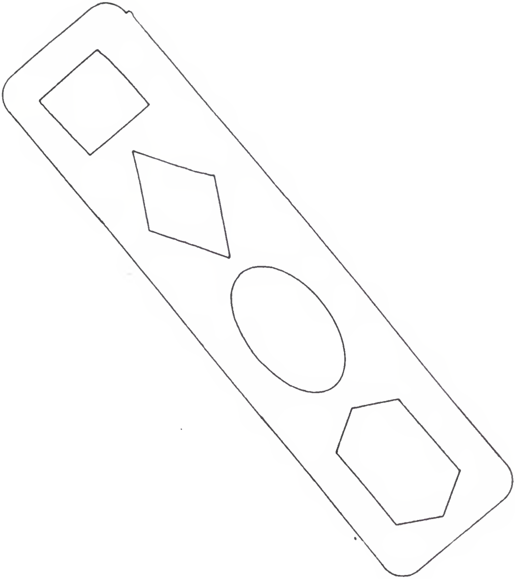
Yes _____ No _____

Total number of school years completed: ________

In native country: _______

In U.S.A.: _______

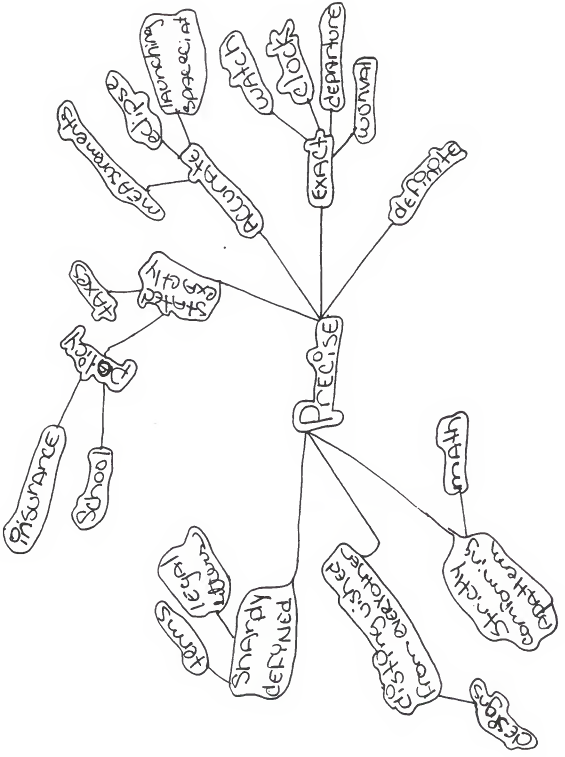
APPENDIX F
SEMANTIC MAPPING TEMPLATE

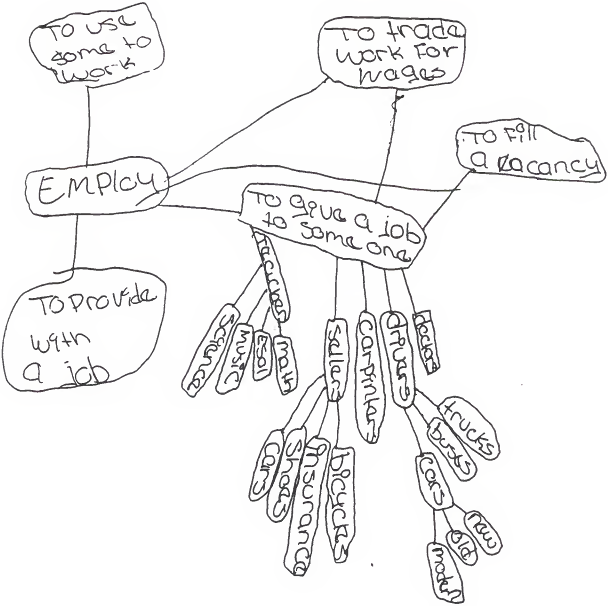


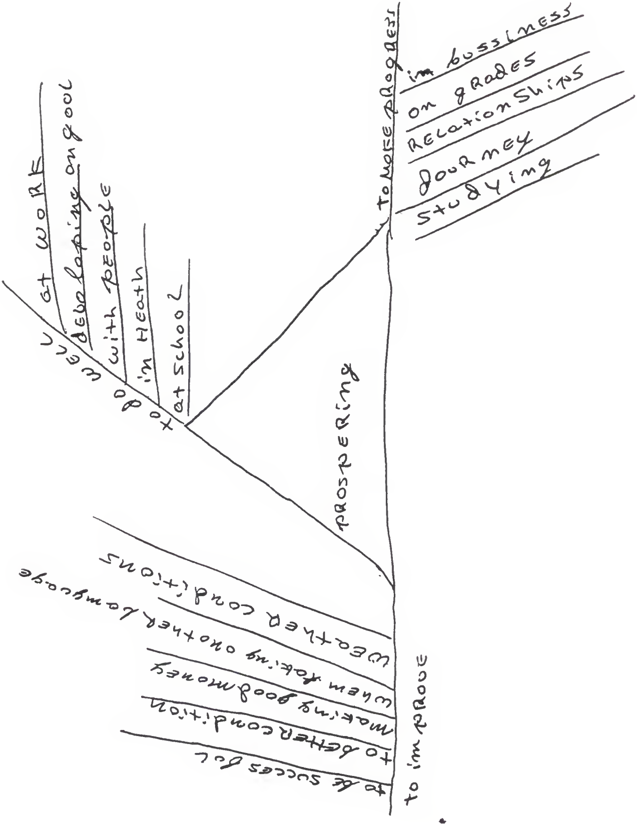
This template was custom designed for this study by ***Empire Berol USA***, San Fernando, CA.

APPENDIX G
SEMANTIC FEATURE ANALYSIS GRID

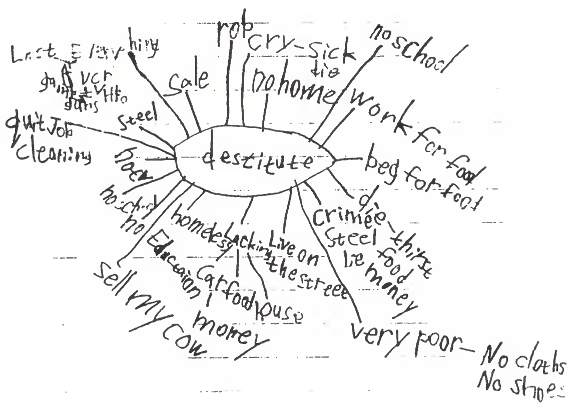
APPENDIX H
STUDENT SAMPLES FROM THE SM GROUP


Precise
Accurate
measurements
eclipse
launching spacecraft
Exact
watch
clock
departure
arrival
definite
stated exactly
taxes
policy
insurance
school
sharply defined
legal terms
terms
distinguished from everything else
designs
strictly conforming pattern
math

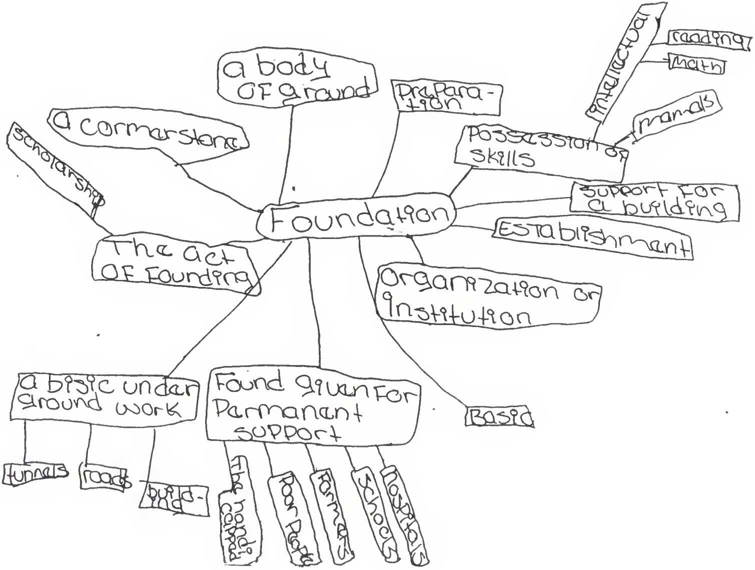

To use some to work
To trade work for wages
To fill a vacancy
EMPloy
To give a job to someone
To provide with a job
teachers
science
music
ESL
math
sellers
carpinter
drivers
doctors
cars
shoes
insurance
bicycles
trucks
buses
cars
new
old
model


to do well
at work
debolaping on good
with people
im Heath
at school
to more progress
im bussiness
on grades
Relationships
journey
studying
prospering
to improve
to be success ful
to better condition
making good money
when taking another languoge
weather conditions

B. destitute



destitute
Lost Everything
hiring
gain VCR
gains VHfo
quit Job
Cleaning
Steel
Sale
rob
cry-sick
die
no home
no school
work for food
beg for food
die-thirst
Crimée
Steel food
i.e. money
very poor- No cloths
No shoes
Live on the street
Lacking
Car food house
homeless
money
no Education
no school
hock
sell my cow


Foundation
a body OF ground
Prepara-tion
Possession of Skills
Intellectual
reading
Math
manuals
Support For a building
ESTablishment
Organization or Institution
Basic
Found given For Parmanant support
hospitals
schools
Farmers
Poor People
The handi-capped
a bisic under ground work
tunnels
roads
build-ing
The act OF Founding
A cornerstone
scholarship

APPENDIX I
STUDENT SAMPLES FROM THE SFA GROUP

Flatter	For people	for Animals	For cars	For wine	For [illegible]	for [illegible]
Praise	+	–	–	–	+	+
Compliment	+	+	+	–	+	+
Congratulate	+	+	–	–	+	+
Smile	+	–	–	–	+	+

i)

	People	Animals	cars	objects	House
Clasp	+	+	+	+	–
hook	–	–	+	0	–
belt	+	+	–	–	–
hug	+	+	–	–	–
hold	+	+	–	+	–

Blunt	Person	Pencil	Knife	Words	Conversation	Jewelry	Haircut			
dull	+	+	+	+	+	+	+			
plain	+	+	+	+	+	+	+			
rough	+	+	+	+	+	+	−			
harsh	+	−	−	+	+	−	−			
to the point	+	−	−	+	+	+	−			

	For People	Business	Planes	Help	School	Animal
Establish	+	+	−	−	+	−
Settle	+	+	+	−	−	+
Set	+	+/−	−	−	+	−
Reside	+	+	+	−	+	−

Advocate person who supports or speaks in favor of a person or things	protector body guard	defensive	parents	family	lawyer	jurymen (judge)	authority	goverment state		
defend guard, protect from danger	☺	☺	☺	☺	☺	SOME TIMES	SOME TIMES	☺		
in support bear the weight of, hold or keep	☹	☹	☺	☺	☹	☹	☺	☺		
justify show that is right or just	☹	☹	☺	☺	☺	☺	☺	☺		
uphold support or approve	☹	☹	☺	☺	☹	☹	☺	☺		

CAMP

	FUN	AFRAID	FUNNY	INTERESTING		NEVIUS	
SLEEP	−	+	−	−	+		
PLAY	+	−	+	+			
EXPLOR		+	+	+			
SWIMIM	+	+	−	+		−	
RUN	+	−	+	−	? +		
COOK	+	−	+	+	+		

requirement: something or needed.	in an airplane	in a Store	lottery jackpot	Travel agency	money	school supplies	walt disney world	shoppy	disco	restaurant	bad situation
demand -> ask for as if ordering or as if one has a Right to:	☺	☺	☺	☺	☺	☹	☹	☹	☹	☺	☺
claim -> to demand recognition that one has the right to	☺	☺	☺	☺	☺	☹	☹	☺	☹	☹	☺
requisite -> needed or required by circumstances or for success.	☺	☺	☺	☺	☺	?	☹	☹	☹	☹	?
need -> necessity	☺	☺	☺	☺	☺	☺	☹	☺	☺	☺	☹
want -> to be in need of	☺	☺	☺	☺	☹	☹	☹	☹	☹	☺	☹
request -> asking or being asked	☺	☺	?	☺	☹	☹	☺	☺	☹	☺	☹
call -> shout: city	☺	☺	☺	☹	☹	☹	☺	☹	☹	☺	☹

Meek- mild and Patiente uprotesting.	mouse.	Person	Parent	teacher	Soap.	shampoo	baby	teddy bear		
humble-having or showing a modest opion of one self.	♡	♡	♡	♡	X	X	?	X		
submissive-yelding to the control or authority of another.	X	♡	♡	♡	X	X	X	X		
mild- soft gentle	X	♡	♡	♡	♡	♡	♡	♡		
soft- changing shape easly when present.	X	♡	♡	♡	♡	♡	♡	♡		

♡ = yes
X = no
? = don't know

momentous	rich	cold fat	exited	happy	nervous	emotional	crazy			
lottery	Y	N	Y	Y	N	Y	N			
honey moon	N	Y	Y	Y	Y	N	N			
drive	N	Y	Y	Y	Y	Y	N			
birth	N	N	Y	Y	Y	Y	Y			
graduation	N	N	Y	Y	Y	N	N			

Clases	Pant	Skirt	Car	Shoes	Papers	mettel	tennisshoe	Shirt	watch	rinugs
zitbell	N	S	A	N	S	A	S	N	N	S
belt	A	S	N	S	N	N	N	S	A	N
buck	N	S	A	N	N	N	N	A	N	N
tie	A	A	N	A	N	W	A	N	N	N
clip	A	N	N	N	A	A	N	N	N	A
macknet	N	N	N	N	N	A	N	N	N	[illegible]
stabbles	N	N	N	N	A	A	N	N	N	W
zipper	A	S	N	S	N	N	N	S	N	N

APPENDIX J
TEACHER PREDICTION SURVEY POSTTEST

Teacher Posttest
Teacher's Perception of Students' Vocabulary Knowledge

NAME

Consider your experience this summer with your seventh grade Spanish-speaking LEP students who participated in the study. For the following words, what percentage of your students do you predict will be able to answer vocabulary multiple choice items correctly on a standard achievement test after using the vocabulary learning method in class?

Sample A

huge	10	20	30	40	50	60	[✓ 70]	80	90	100

The teacher predicts that 70% of his/her seventh grade Spanish-speaking students will be able to respond correctly to a multiple choice item testing the word "huge."

1. word[1]	10	20	30	40	50	60	70	80	90	100
2. word	10	20	30	40	50	60	70	80	90	100
3. word	10	20	30	40	50	60	70	80	90	100
4. word	10	20	30	40	50	60	70	80	90	100
5. word	10	20	30	40	50	60	70	80	90	100
6. word	10	20	30	40	50	60	70	80	90	100
7. word	10	20	30	40	50	60	70	80	90	100
8. word	10	20	30	40	50	60	70	80	90	100
9. word	10	20	30	40	50	60	70	80	90	100
10. word	10	20	30	40	50	60	70	80	90	100
11. word	10	20	30	40	50	60	70	80	90	100
12. word	10	20	30	40	50	60	70	80	90	100
13. word	10	20	30	40	50	60	70	80	90	100
14. word	10	20	30	40	50	60	70	80	90	100
15. word	10	20	30	40	50	60	70	80	90	100
16. word	10	20	30	40	50	60	70	80	90	100

17. word	10	20	30	40	50	60	70	80	90	100
18. word	10	20	30	40	50	60	70	80	90	100
19. word	10	20	30	40	50	60	70	80	90	100
20. word	10	20	30	40	50	60	70	80	90	100
21. word	10	20	30	40	50	60	70	80	90	100
22. word	10	20	30	40	50	60	70	80	90	100
23. word	10	20	30	40	50	60	70	80	90	100
24. word	10	20	30	40	50	60	70	80	90	100
25. word	10	20	30	40	50	60	70	80	90	100
26. word	10	20	30	40	50	60	70	80	90	100
27. word	10	20	30	40	50	60	70	80	90	100
28. word	10	20	30	40	50	60	70	80	90	100
29. word	10	20	30	40	50	60	70	80	90	100
30. word	10	20	30	40	50	60	70	80	90	100
31. word	10	20	30	40	50	60	70	80	90	100
32. word	10	20	30	40	50	60	70	80	90	100
33. word	10	20	30	40	50	60	70	80	90	100
34. word	10	20	30	40	50	60	70	80	90	100
35. word	10	20	30	40	50	60	70	80	90	100
36. word	10	20	30	40	50	60	70	80	90	100
37. word	10	20	30	40	50	60	70	80	90	100
38. word	10	20	30	40	50	60	70	80	90	100
39. word	10	20	30	40	50	60	70	80	90	100
40. word	10	20	30	40	50	60	70	80	90	100

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[1] The forty terms used in this study were taken from the forty item stems of the vocabulary subtest of the eighth edition of Stanford Achievement Test Intermediate 3, Form J. For test security purposes, all forty items have been replaced with ***word***.

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Born in Jackson, Mississippi, in 1964, Lorraine Clayton Kandor holds a Bachelor of Arts in English, with a minor in French, from Slippery Rock University. She also holds a Master of Arts in English, with an emphasis in English to speakers of other languages (ESOL), from Indiana University of Pennsylvania. Both degrees involved study in Nancy, France, at l'Université de Nancy II and l'Institut Universitaire de Technologie, respectively.

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Her professional career began in Nancy, France, as an American business English instructor at the Chamber de Commerce Centre d'Etudes de Langues. She later became a faculty English instructor at Jacksonville University for the International Students of English program. During this time, she was also an adjunct ESOL instructor at Florida

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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